

[ Pop captions up ]

**Frank Linhares:** I'M FRANK LINHARES FROM digitalunderground.tv.

IF YOU FIND 3D SCANNING AMAZING  
YET EXPENSIVE, I'M GOING TO  
SHOW YOU HOW TO DO IT FOR  
FREE TODAY ON "THE LAB WITH LEO."

[ Pop captions down ]

(Theme music: Digital, integrating dial-up modem)

[ Pop captions up ]

**Leo Laporte:** HEY, HOW ARE YOU?

GOOD TO SEE YOU AND WELCOME.

IT'S TIME FOR "THE LAB."

LEO LAPORTE HERE.

AND FRANK LINHARES IS A  
COMPLETE AND UTTER DWEEB.

NERDY, NERDY, NERDY.

HE'S GONNA-- WOULD YOU LIKE TO 3D SCAN?

**Both:** (laughing)

**Kate:** THE LADIES LOVE THAT.

**Leo:** THE LADIES LOVE 3D SCANNING!

**Kate:** ALL FOR 3D SCANNING, OH.

**Leo:** YEAH.

WELL, YOU WOULD KNOW, YOU'RE A LADY.

THIS IS, LADIES AND GENTLEMEN,

KATE ABRAHAM.

**Kate:** HELLO.

[ Pop captions down ]

**Leo:** OUR VERY TALENTED AND

CAPABLE PRODUCER WHO HAS LINED  
UP SOME GREAT CALLS FOR US AND  
I SEE WE HAVE SOME GREAT GUESTS.  
FAISAL BEG IS GOING TO BE HERE.

**Kate:** YES.

**Leo:** THIS IS-- HE'S COME IN BEFORE.  
WE WERE TALKING ABOUT MRIs.

**Kate:** YEAH.

**Leo:** AND WE'RE GOING TO TALK  
ABOUT MEDICAL IMAGE ANALYSIS,  
THE KIND OF STUFF THAT'S GOING  
TO SAVE YOUR LIFE.

**Kate:** ABSOLUTELY.

**Leo:** VERY SCIENCE FICTIONY TOO.  
AND IT'S RELATED BECAUSE FRANK  
IS DOING THE HOME VERSION.

**Kate:** (laughing)

**Leo:** YEAH, WE'RE GOING TO  
SHOW YOU HOW YOU CAN SCAN --

**Kate:** WOW.

**Leo:** -- YOU KNOW, ACTION  
FIGURES, SEE IF THEIR BRAINS  
ARE OKAY.

**Kate:** OKAY, GOOD.

**Leo:** SEE IF THEY HAVE ANY BRAINS.  
ACTUALLY, BUILD YOUR OWN  
SCANNER, THAT'S KIND OF INTERESTING.

AKASH SABLOK IS ALSO HERE.  
HE IS A GREAT GADGET GUY.

**Kate:** YES.

**Leo:** HE'S GOT TOYS AND GAMES  
FOR BIG AND SMALL, LITTLE AND  
TALL, WE HAVE IT ALL RIGHT HERE

ON THIS SHOW.

**Kate:** YES.

**Leo:** NOW, LET'S GET TO OUR  
FIRST CALL OF THE DAY, WHAT YOU  
DO YOU SAY?

**Kate:** FANTASTIC.

WE'RE GOING DOWN UNDER.  
WE'RE GOING TO IPSWITCH IN  
QUEENSLAND AND WE HAVE TERRY.

**Leo:** OKAY.

**Kate:** OKAY? (laughing)

[ Pop captions up ]

**Leo:** OKAY, THANK YOU, KATE.

HEY, TERRY.

I WAS WAITING FOR MORE.

I DON'T KNOW WHAT I WAS WAITING FOR.

HELLO, TERRY, HOW ARE YOU TODAY?

**Terry:** OH, I'M GOOD, LEO, THANKS.

HOW ARE YOU?

**Leo:** I'M GREAT.

WELCOME TO THE SHOW AND YOU'RE  
GOING TO KICK US OFF WITH A  
GREAT QUESTION, I KNOW.

[ Pop captions down ]

**Terry:** OKAY.

I'VE BEEN HAVING A BIT OF  
TROUBLE WITH THESE HORRIBLE  
LITTLE THINGS.

**Leo:** (laughing)

**Terry:** THEY'RE 4 GIG SD CARDS.

**Leo:** YEAH.

**Terry:** WE'VE GOT A CAMERA  
THAT TAKES THEM AND I'VE GOT IN

THE HOUSE ABOUT SIX DIFFERENT COMPUTERS.

TRIED MULTIPLE DIFFERENT  
COMPUTERS, MULTIPLE DIFFERENT  
CARD READERS, A LAPTOP WITH A  
BUILT-IN CARD READER,  
EVERYTHING ELSE, AND NOTHING  
SEEMS TO BE ABLE TO READ A FULL  
GIG SD CARD.

THE 2 GIG OR 1 GIG ARE FINE,  
BUT THE 4 GIG CARDS IT WON'T READ.

**Leo:** YEAH.

**Terry:** THE ONLY WAY WE CAN  
ACTUALLY READ THEM IS BY HAVING  
THE CARD IN THE CAMERA AND PLUGGING --

**Leo:** RIGHT.

**Terry:** -- THE CAMERA ITSELF  
INTO THE COMPUTER.

[ Pop captions up ]

**Leo:** RIGHT.

WHAT'S HAPPENING IS THEY'VE  
CHA-- (laughing) AS IF WE  
DIDN'T HAVE ENOUGH DIFFERENT  
KINDS OF MEMORY CARDS, THEY'VE  
CHANGED THE STANDARDS FOR  
SECURE DIGITAL CARDS, THOSE SD  
CARDS YOU WERE HOLDING UP THERE.

**Terry:** YEAH.

[ Pop captions down ]

**Leo:** THE ORIGINAL SD CARDS  
WERE UP TO 2 GIGABYTES.  
THEY ACTUALLY WERE FORMATTED  
FAT16, IF YOU KNOW ANYTHING  
ABOUT Windows FILE SYSTEMS.

**Terry:** RIGHT.

**Leo:** THAT FILE SYSTEM IS LIMITED TO A 2 GIGABYTE FILE -- OR DRIVE SIZE.

THAT'S WHY IN THE OLD COMPUTERS YOU COULDN'T GET ANY BIGGER THAN A 2 GIGABYTE HARD DRIVE, REMEMBER THAT?

**Terry:** YEAH.

**Leo:** IN FACT, IF YOU HAD A BIGGER DRIVE, THEY'D PARTITION IT.

**Terry:** YEAH, THAT WAS BACK IN THE STONE AGES.

**Leo:** SO, CLEARLY WE'VE-- YOU KNOW, 2 GIGS IS NOT ENOUGH ANYMORE FOR MODERN CAMERAS, FOR VIDEO AND SO FORTH, SO THEY HAVE A NEW STANDARD CALLED SDHC. HC STANDS FOR "HIGH CAPACITY". THESE CARDS ARE FORMATTED WITH FAT32. THEY CAN GO AS HIGH AS 32 GIGABYTES. I'VE SEEN 8 GIGABYTES.

I DON'T KNOW IF WE'VE GOT ANYTHING BIGGER THAN THAT. YOU HAVE A 4 GIGABYTE CARD. THAT IS, BY DEFINITION, AN SDHC CARD. SO, THAT CARD CAN ONLY BE READ IN A READER CAPABLE OF READING FAT32, AN SDHC CARD READER. SO, ALL OF YOUR COMPUTERS HAVE THE OLD STYLE SD CARD READERS. THEY CAN'T READ THE NEW STYLE GIANT CARDS.

**Terry:** RIGHT, SO THERE'S NO  
DRIVERS THAT WE CAN INSTALL TO  
(indiscernible).

**Leo:** IT'S NOT A DRIVER ISSUE  
AT ALL, IT'S A HARDWARE ISSUE.  
NOW, THE GOOD NEWS IS EASY TO FIX.  
YOU CAN BUY AN SD CARD--  
DO YOU HAVE A HIGH CAPACITY SD  
CARD READER ANYWHERE?

**Sean:** A READER, NO.

**Leo:** YEAH.  
BECAUSE ALL OF OUR READERS  
ARE-- HERE'S A-- YEAH, HAND ME THE...

**Sean:** THIS IS AN OLD SCHOOL ONE.

**Leo:** THIS IS THE KIND I USE,  
BUT THIS WOULDN'T READ IT  
EITHER AND THIS IS A LARGER CARD?  
YEAH, THIS IS--

**Sean:** THAT'S 2 GIG.

**Leo:** THIS IS AN OLDER SD  
CARD, 2 GIGS, THAT WAS AS BIG  
AS THEY COULD GO.  
SO, THAT'LL WORK FINE IN THIS.  
BUT YOU KNOW WHAT, GO TO THE STORE.  
FOR 30 BUCKS OR LESS YOU CAN  
GET AN SDHC READER AND THAT'LL  
READ THE OLD CARDS, AS WELL AS THE NEW.  
IN FACT, I HAVE ONE THAT LOOKS  
JUST LIKE A THUMB DRIVE.

SanDisk MAKES IT.

YOU OPEN IT-- IT IS A THUMB DRIVE.  
IT'S A 2 GIG THUMB DRIVE, BUT  
YOU OPEN IT UP AND THERE'S A

LITTLE PLACE TO PUT AN SD CARD  
AND CLOSE IT AND IT CAN READ  
THE BIG ONES TOO.  
AND I USE IT FOR MY CAMCORDER  
THAT HAS H-- HD-- HC CARDS, 8  
GIGABYTE HC CARDS IN IT.  
SO, THE CAMERA CAN READ IT  
BECAUSE THE CAMERA CAN WRITE IT.  
THE CAMERA IS AN HC CAMERA.

**Terry:** YEAH.

**Leo:** BUT YOUR OLD READERS  
CAN'T AND IT'S JUST A HARDWARE ISSUE.  
IT'S NOT A SOFTWARE OR A DRIVER  
ISSUE, IT'S JUST A HARDWARE ISSUE.

**Terry:** OH, RIGHT.

YEAH, THE REASON WE WENT FOR  
THE Toshiba LAPTOP WITH THE  
CARD READER IN IT IS WE DIDN'T  
WANT TO HAVE TO HAVE AN  
EXTERNAL CARD READER --

**Leo:** OF COURSE. (laughing)  
OF COURSE YOU DIDN'T.

**Terry:** -- HOOKING UP WHEN WE  
(indiscernible) TO TAKE PHOTOS.

**Leo:** YEAH.

**Terry:** BUT IT DOESN'T LOOK  
LIKE WE'RE GOING TO BE ABLE TO  
WORK WITH THAT.

**Leo:** WELL, LET ME SHOW YOU THE SanDisk.  
IT'S SO SMALL.  
I THINK-- YOU KNOW, IT'S WHAT I  
CARRY WITH ME.

AND THE OTHER THING IS OF

COURSE THESE ARE FASTER BECAUSE  
THEY'RE USB 2 AND SO FORTH.  
LET ME SEE IF I CAN FIND THE  
ONE I'M USING.

IT'S A LITTLE -- IT'S JUST A  
LITTLE THUMB DRIVE.

IT'S REALLY, REALLY CUTE.

**Terry:** I THINK I'VE SEEN THEM.

**Leo:** YEAH, IT'S CALLED THE MicroMate [sic].

AND SO IT'S SMALL ENOUGH THAT  
YOU CAN PUT IT IN YOUR-- WELL,  
THIS ISN'T IT, BUT THIS WILL WORK TOO.

THESE ARE SO SMALL YOU CAN PUT  
THEM IN YOUR POCKET.

HERE IT IS, THIS IS THE

MicroMate -- OR MobileMate,

THAT'S WHAT IT'S CALLED.

AND SO IT'S JUST LIKE, IT'S  
REALLY FUNNY, I MEAN IT'S JUST

A -- IT LOOKS LIKE A USB KEY,

BUT IT HAS A LITTLE SLOT FOR  
THE SD CARD IN IT.

AND THAT JUST MAKES IT SO EASY  
TO CARRY AROUND.

AND THESE ARE \$12, SO YOU'RE  
NOT GOING TO SPEND A LOT OF  
MONEY ON THIS.

I KNOW, IT'S NICE TO HAVE IT  
BUILT IN, BUT UNFORTUNATELY THE  
OLDER LAPTOPS JUST CAN'T DO IT.

**Terry:** YES, A YEAR OLD  
LAPTOP CAN'T DO IT ANYMORE.

**Leo:** YEAH.

THAT'S A FAMILIAR STORY, ISN'T  
IT, IN TECHNOLOGY.

**Terry:** IT IS.

**Leo:** THIS STUFF CHANGES SO FAST.  
IT WAS A BAD DECISION TO,  
FRANKLY, MAKE THEM 16 -- FAT16,  
I THINK THAT WAS JUST A BAD  
IDEA, BUT I GUESS AT THE TIME  
NOBODY THOUGHT YOU'D EVER WANT  
MORE OR BE ABLE TO GET MORE  
THAN 2 GIGABYTES ON AN SD CARD, HA-HA.

**Terry:** NO, WHO COULD  
POSSIBLY WANT MORE THAN, YOU  
KNOW, 64 K OF RAM.

**Leo:** EXACTLY. EXACTLY.  
THE FAMOUS BILL GATES QUOTE, SO  
THERE YOU GO.

**Terry:** YES.

**Leo:** TIMES CHANGE AND WE  
SHOULD PLAN AHEAD.  
I'M SURE, YOU KNOW--

**Terry:** THAT'S GIVEN ME THE  
ANSWER TO THE PROBLEM I WAS HAVING.

**Leo:** YEAH.  
I'M SURE 32 GIGS, WHICH IS THE  
LIMIT OF FAT32, WILL BE TOO  
LITTLE AT SOME POINT TOO AND  
YOU'LL WANT -- SAY, WELL, I  
HAVE TO GET A NEW READER NOW  
THAT CAN READ THE NEW 128  
GIGABYTE MEMORY CARDS.

**Terry:** YEAH, WELL, THAT'LL  
ONLY BE A COUPLE OF YEARS AWAY.

**Leo:** MAYBE. (laughing)

MAYBE.

I WOULDN'T COUNT ON IT.

TERRY, THANKS FOR THE CALL.

**Terry:** (laughing)

ALL RIGHT, LEO.

WELL, THANKS FOR YOUR HELP WITH THAT.

**Leo:** GREAT TO TALK TO YOU.

**Terry:** I APPRECIATE IT.

**Leo:** TAKE CARE.

[ Pop captions down ]

**Leo:** COMING UP, FAISAL BEG.

HE IS GOING TO TALK ABOUT  
MEDICAL IMAGE ANALYSIS, THE  
AMAZING STEPS WE'RE MAKING.  
HEY, THIS TAKES X-RAYS TO THE  
NEXT LEVEL.

YOU STAY RIGHT HERE, WE'LL TALK  
ABOUT IT RIGHT AFTER THIS.

[ Music ]

[ BLACK/COMMERCIAL ]

[ Pop captions down ]

(Theme music playing)

**Leo Laporte:** WELCOME BACK TO "THE LAB."

WE WANT TO WELCOME BACK FAISAL BEG.

HE IS THE ASSISTANT PROFESSOR  
OF THE SCHOOL OF ENGINEERING  
SCIENCE AT SIMON FRASER UNIVERSITY.

ACTUALLY, THERE'S A NEW, THIS  
IS EXCITING, SCHOOL OF  
ENGINEERING SCIENCE, THE NEW  
BIOMEDICAL ENGINEERING PROGRAM.

**Faisal:** ABSOLUTELY.

BRAND NEW PROGRAM, CUTTING  
EDGE, STATE OF ART FOR THE BEST  
OF THE BEST STUDENTS.

**Leo:** THAT'S REALLY NEAT.

**Faisal:** YEAH.

**Leo:** WE TALKED ABOUT THIS  
LAST TIME YOU WERE HERE TO TALK  
ABOUT HOW MRIs WORK.

**Faisal:** THAT'S RIGHT.

**Leo:** THIS IS A BIG FIELD,  
THIS BIOMEDICAL ENGINEERING, RIGHT?

[ Pop captions up ]

**Faisal:** IT'S A HUGE FIELD.

IT'S UP AND COMING.

IT'S JUST STARTING.

IT HAS A LOT OF POTENTIAL.

THINK ABOUT IT, ENGINEERS HAVE  
BEEN DESIGNING ALL THESE COOL  
GADGETS AROUND US.

**Leo:** RIGHT.

[ Pop captions down ]

**Faisal:** NOW, THERE'S A HUGE  
POTENTIAL TO APPLY ENGINEERING  
TECHNOLOGIES TO, YOU KNOW,  
HELPING HUMAN BODY AND HELPING  
HUMAN HEALTH.

SO, THERE IS A HUGE AMOUNT OF  
POTENTIAL TO DESIGN IMAGING  
EQUIPMENT, IMAGING ALGORITHMS,  
PHOTONICS, REHABILITATIVE AND  
ASSISTIVE DEVICES.

YOU NAME IT, YOU KNOW, THERE IS  
A HUGE AMOUNT OF THINGS TO BE

DONE IN THIS FIELD AND LOTS OF  
EXCITEMENT BECAUSE YOU ARE  
STUDYING ENGINEERING --

**Leo:** RIGHT.

**Faisal:** -- AND YOU ARE  
STUDYING BIOLOGY AND THE HUMAN  
BODY, ALL COMING UNDER ONE.

[ Pop captions up ]

**Leo:** I THINK OF ALL THE WAYS  
DIGITAL TECHNOLOGY HAS CHANGED MEDICINE --

**Faisal:** YES.

**Leo:** -- FROM COCHLEAR IMPLANTS.

**Faisal:** ABSOLUTELY.

**Leo:** I MEAN, JUST IT'S AMAZING.

**Faisal:** ABSOLUTELY.

**Leo:** WHAT AN INTERESTING  
AREA TO BE IN RIGHT NOW.

**Faisal:** YES, IT'S A GREAT AREA.

[ Pop captions down ]

**Leo:** NOW, LAST TIME YOU WERE  
HERE YOU TALKED ABOUT HOW AN  
MRI WORKS --

**Faisal:** YES.

**Leo:** -- MAGNETIC RESONANCE IMAGING.

**Faisal:** THAT'S RIGHT.

**Leo:** IT'S A WAY OF GETTING  
3D X-RAYS BASICALLY --

**Faisal:** THAT'S RIGHT.

**Leo:** -- RIGHT?

**Faisal:** EXACTLY.

IT'S A WAY OF GETTING 3D  
PICTURES OF THE INTERNAL HUMAN  
ANATOMY IN THE LIVING HUMAN.

SO, YOU AND I, WE CAN GO AND  
LIE DOWN IN THE SCANNER, LISTEN  
TO OUR FAVORITE MUSIC, AND OUT  
COMES BEAUTIFUL PICTURES THAT  
SHOW EXACTLY WHAT OUR BRAIN  
LOOKS LIKE IN 3D, OUR HEART  
LOOKS LIKE AND HOW IT BEATS IN  
3D AND SO ON.

SO, TODAY I WANT TO TAKE YOU A  
STEP FURTHER.

**Leo:** OKAY.

**Faisal:** ONCE YOU GET THESE  
IMAGES IN 3D --

**Leo:** MM-HMM.

**Faisal:** -- THERE'S STILL A  
LOT OF IMPROVEMENT TO BE DONE  
IN HOW WE ANALYZE THESE IMAGES.  
RIGHT NOW PEOPLE LOOK AT THEM  
ON THE COMPUTER SCREEN.

**Leo:** HUMAN RADIOLOGISTS WILL  
READ THEM.

**Faisal:** THAT'S RIGHT.

AND, YOU KNOW, YOU HAVE 2D FLAT  
PANEL DISPLAYS --

**Leo:** RIGHT.

**Faisal:** -- TO DISPLAY THESE  
IMAGES, BUT THE INFORMATION IS  
REALLY 3D.

SO, THERE IS A LOT OF  
ALGORITHMS TO BE DEVELOPED AND  
ARE BEING DEVELOPED THAT WILL  
QUANTIFY THE 3D INFORMATION  
AVAILABLE IN THESE IMAGES AND

PRESENT THEM BETTER TO THE  
RADIOLOGISTS AND TO THE DOCTORS  
WHO ARE LOOKING AFTER YOU.

**Leo:** AND ALSO I IMAGINE WE  
WANT TO DO COMPUTER  
DIAGNOSTICS AS WELL.

**Faisal:** EXACTLY, EXACTLY.

**Leo:** LET THE COMPUTER DO  
SOME OF THIS WORK.

**Faisal:** ABSOLUTELY.

**Leo:** YEAH.

**Faisal:** ABSOLUTELY.

BECAUSE THE HUMAN EYE CANNOT,  
YOU KNOW, DIAGNOSE AND QUANTIFY  
THE SMALLEST SUBTLE FEATURES,  
SO COMPUTERS CAN DO IT MUCH  
BETTER IN SOME SENSE.  
SO, LET ME SHOW YOU SOME OF THE IMAGES.  
YOU KNOW, HERE ON THE SCREEN --

**Leo:** THIS LOOKS LIKE A BRAIN.

**Faisal:** THIS IS THE BRAIN.  
YOU HAVE THREE VIEWS OF THE  
BRAIN AND YOU CAN USE THESE  
THREE VIEWS TO GENERATE 3D  
MODELS OF THE HUMAN BRAIN.

**Leo:** NOW, THAT LOOKS 3D.

**Faisal:** YEAH.

**Leo:** I MEAN, IT'S STILL 2D,  
BUT IT SIMULATES THE 3D BEAUTIFULLY.

**Faisal:** YEAH, EXACTLY,  
IT'S A FULL 3D MODEL THAT YOU  
CAN, YOU KNOW, ROTATE AND --

**Leo:** AND IT'S COLOURED TOO

WHICH HELPS.

**Faisal:** IT'S COLOURED TOO.

**Leo:** YEAH.

**Faisal:** YOU CAN SEE  
DIFFERENT AREAS OF THE BRAIN,  
DIFFERENT AREAS OF THE INTERNAL ANATOMY.  
HERE IS A HEART AND YOU CAN  
SEE, YOU CAN GET A 3D OF THE HEART.

**Leo:** WE'RE ACTUALLY GETTING VIDEO, WOW.

**Faisal:** SO, YOU CAN STACK UP  
THESE 2D SLICES AND MAKE 3D MODELS.  
HERE IS A PICTURE, A  
CROSS-SECTION OF MY THIGH AND  
YOU CAN GET A GOOD--

**Leo:** YOUR THIGH?

**Faisal:** THAT'S MY THIGH ON  
THE LEFT OVER HERE.

**Leo:** (laughing)

**Faisal:** AND YOU CAN SEE  
THESE YELLOW ARE THE SCIATIC NERVES AND--

**Leo:** WOW.

NOW, HOW DO THEY GET A  
CROSS-SECTION WITHOUT SLICING  
YOUR THIGH?

**Faisal:** THAT'S THE BEAUTY OF  
MRI AND CT, YOU CAN ACTUALLY  
GET CROSS-SECTIONAL IMAGES OF  
THE INSIDE OF THE BODY WITHOUT  
SLICING YOU UP.

**Leo:** IT TAKES ENOUGH  
PICTURES THAT IT CAN  
ESSENTIALLY FIGURE OUT WHAT IT  
LOOKS LIKE TO BE A

CROSS-SECTION.

**Faisal:** EXACTLY, EXACTLY, IT WILL STACK THEM UP AND MAKE 3D MODELS OUT OF 2D PICTURES.

**Leo:** WOW, THAT'S AMAZING.

**Faisal:** SO, YOU KNOW, HERE WE HAVE, YOU KNOW, A NORMAL BRAIN ON THE LEFT-HAND SIDE --

**Leo:** OKAY.

**Faisal:** -- AND HERE WE HAVE AN ALZHEIMER'S BRAIN ON THE RIGHT-HAND SIDE.

AND THERE'S LOTS OF THINGS THAT ARE HAPPENING IN THIS PATHOLOGY, IN THIS DISEASE WHICH YOU WOULD LIKE TO QUANTIFY AND DETECT THE DISEASE EARLY IN ADVANCE.

SO, YOU CAN ACTUALLY SEE IN THE LOWER PANEL A NORMAL AGING BRAIN, A BRAIN WITH MILD COGNITIVE IMPAIRMENT, AND A BRAIN WITH ALZHEIMER'S DISEASE.

**Leo:** INTERESTING.

**Faisal:** LOOK HOW BIG THE VENTRICLES ARE.

LOOK HOW BIG - YOU KNOW, HOW BIG THE CELL-- EXTRA CELLULAR SPACES ARE.

**Leo:** YEAH.

**Faisal:** SO, WHAT I'M GOING TO TALK TO YOU TODAY ABOUT IS HOW TO QUANTIFY ANATOMICAL SHAPE.

HOW TO PUT A RULER OR A METRIC  
AND MEASURE IS THIS SHAPE CLOSE  
TO NORMAL OR IS THIS SHAPE FAR  
AWAY FROM NORMAL.

**Leo:** THIS IS THE KIND OF  
THING YOU HAVE TO KNOW FOR  
COMPUTER ANALYSIS.

**Faisal:** EXACTLY.

**Leo:** IT HAS TO QUANTIFY EVERYTHING.

**Faisal:** EXACTLY, QUANTIFY EVERYTHING.  
SO, THE --

**Leo:** HUMANS CAN USE A  
INTUITION, NOT A COMPUTER.

**Faisal:** THAT'S RIGHT, THAT'S RIGHT.

**Leo:** YEAH.

**Faisal:** WE CAN QUANT—WE CAN--

**Leo:** I MEAN, I LOOK AT THE  
BRAIN, I SAY OBVIOUSLY IT LOOKS DIFFERENT.

**Faisal:** YEAH, THAT'S RIGHT.

THE RADIOLOGISTS DO IT ALL THE TIME.

**Leo:** RIGHT.

**Faisal:** THEY LOOK AT A BRAIN  
AND SAY, YEAH, YOU'RE CLOSE TO NORMAL --

**Leo:** I GET IT, RIGHT.

**Faisal:** -- OR YOU'RE FAR  
AWAY FROM NORMAL, SO YOU'RE  
MAYBE HAVING A DISEASE, BUT HOW  
DO YOU MAKE A COMPUTER DO THIS?

**Leo:** HOW DO YOU QUANTIFY IT, YEAH.

**Faisal:** EXACTLY.

SO, D'ARCY THOMPSON IN 1917  
CAME UP WITH THIS IDEA THAT IF  
YOU CAN TAKE TWO OBJECTS, YOU

MAY NOT BE ABLE TO DESCRIBE  
EACH ONE SEPARATELY, BUT IF YOU  
CAN DEFORM ONE TO MAKE IT LOOK  
LIKE THE OTHER, THAT THE  
DEFORMATION THAT YOU GET  
QUANTIFIES HOW CLOSE OR HOW FAR  
YOU ARE.

**Leo:** SO, THAT'S A  
MATHEMATICAL FORMULA --

**Faisal:** EXACTLY.

**Leo:** -- OF HOW IT'S BEEN DEFORMED --

**Faisal:** EXACTLY.

**Leo:** -- AND THEN WE CAN  
DESCRIBE THAT DIFFERENCE AS A FORMULA.

**Faisal:** EXACTLY.

SO, IF YOU LOOK AT THIS IMAGE  
OVER HERE, HERE ARE TWO BRAIN  
IMAGES AND WHAT WE WOULD LIKE  
TO DO IS FIND CORRESPONDING POINTS.

**Leo:** RIGHT.

**Faisal:** LIKE THIS POINT OVER  
HERE GOES OVER HERE AND SO ON.  
THEN THIS CORRESPONDENCE GIVES  
YOU A MOTION OF EVERY POINT.

**Leo:** HERE'S HOW IT CHANGED.

**Faisal:** SO, IF YOU WERE TO  
SIT ON THESE POINTS, EVERY  
POINT IT WILL MOVE A LITTLE BIT.

**Leo:** MM-HMM. MM-HMM.

**Faisal:** AND SO HERE IS  
SHOWING THE MOTION OF EACH POINT --

**Leo:** WITH VECTORS.

**Faisal:** -- WITH VECTORS.

**Leo:** YEAH, YEAH.

**Faisal:** SO, IT'S LIKE, YOU  
KNOW, INSTEAD OF ONE POINT NOW  
YOU HAVE MOTION OF ALL THE  
POINTS TAKEN TOGETHER AND THIS  
QUANTIFIES THE DIFFERENCE OF  
SHAPE BETWEEN THE TWO BRAINS.

**Leo:** A HUMAN CAN INTUIT IT  
AND SENSE IT --

**Faisal:** THAT'S RIGHT.

**Leo:** -- BUT IT'S MUCH HARDER  
FOR US TO SAY, WELL, THIS,  
THIS, THIS OR THIS --

**Faisal:** THAT'S RIGHT.

**Leo:** -- AND THE COMPUTER  
NEEDS THAT KIND OF INFORMATION.

**Faisal:** THAT'S RIGHT,  
EXACTLY, AND WE CAN COME UP  
WITH A NUMBER EVENTUALLY THAT  
SAYS, OKAY, THIS IS THE VECTOR FIELD --

**Leo:** THIS IS THE TRANSFORMATION.

**Faisal:** AND THIS IS-- AND WE  
CAN QUANTIFY THAT AND SAY --

**Leo:** WOW.

**Faisal:** -- THIS IS THE  
NUMBER, THIS IS HOW FAR YOU ARE  
FROM THAT.

FOR EXAMPLE, IF YOU ARE TO  
COMPARE THIS AND THIS SHAPE,  
THEN WE CAN GET A SEQUENCE OF  
SHAPES IN THE MIDDLE THAT  
DEFORM THE TEMPLATE SHAPE  
SLOWLY TO MAKE IT LOOK LIKE THE TARGET.

**Leo:** WOW.

**Faisal:** BECAUSE EACH POINT  
IS MOVING, YOU KNOW, SLOWLY TO GET TO--

**Leo:** BUT A SINGLE NUMBER CAN  
REPRESENT THAT.

**Faisal:** A SINGLE NUMBER WILL  
REPRESENT THE WHOLE --

**Leo:** AND THAT GIVES YOU A  
GOOD DIAGNOSTIC.

[ Pop captions up ]

**Faisal:** WELL, THAT HAS TO BE  
SHOWN, BUT WE ARE --

**Leo:** RIGHT.

**Faisal:** -- ON THE PATH TO  
BUILDING THESE TOOLS --

**Leo:** RIGHT.

**Faisal:** -- TO ALLOW THE  
COMPUTER TO QUANTIFY ANATOMICAL SHAPE --

**Leo:** RIGHT.

**Faisal:** -- WHICH AS HUMANS  
WE DO GREAT JOB AT INTUITIVELY --

**Leo:** RIGHT.

**Faisal:** -- QUALIFYING WHAT IT IS.

**Leo:** RIGHT, RIGHT.

**Faisal:** SO, I'M SHOWING YOU--

[ Pop captions down ]

**Leo:** WHAT A CHALLENGE.  
THIS IS ALMOST ARTIFICIAL  
INTELLIGENCE, ISN'T IT?

**Faisal:** IT'S EXACTLY VERY  
MUCH LIKE ARTIFICIAL INTELLIGENCE --

**Leo:** YEAH, YEAH.

**Faisal:** -- OR BUILDING

ARTIFICIAL ALGORITHMS.

**Leo:** YEAH.

**Faisal:** SO, WE HAVE THESE  
ALGORITHMS THAT CAN QUANTIFY  
CLOSE AND FAR.

LET ME SHOW YOU ONE MORE  
PROBLEM THAT WE ARE LOOKING AT.  
SO, HERE IS THE APPLICATION.

FOR EXAMPLE, WE SEE THAT THIS  
METRIC DISTANCE, THIS NUMBER  
THAT QUANTIFIES THE DISTANCE  
BETWEEN TWO SHAPES IS  
INCREASING MUCH FASTER IN  
PEOPLE WHO HAVE ALZHEIMER'S THAN --

**Leo:** AHH.

**Faisal:** -- THAN PEOPLE WITH  
NORMAL AGING.

**Leo:** SO, YOU COULD SAY THAT  
HERE-- THERE MAY-- NOW, WE  
DON'T KNOW --

**Faisal:** YES.

**Leo:** -- THERE MAY BE A  
DIAGNOSTIC THERE --

**Faisal:** EXACTLY.

**Leo:** -- IF YOU COULD QUANTIFY THAT.

**Faisal:** EXACTLY.

**Leo:** YEAH.

[ Pop captions up ]

**Faisal:** SO, WE ARE IN THE  
PROCESS OF VALIDATING THIS  
AND APPLYING IT --

**Leo:** INTERESTING.

**Faisal:** -- TO ACTUAL

DISEASES IN THE HUMAN BODY.

**Leo:** INTERESTING.

[ Pop captions down ]

**Leo:** THAT'S THE KIND OF  
STUFF THAT NUMBERS CAN START TO SHOW --

**Faisal:** EXACTLY.

**Leo:** -- AND BRING UP, YEAH.

**Faisal:** AND BE VERY PRECISE  
AND QUANTIFY --

**Leo:** RIGHT.

**Faisal:** -- YOU KNOW, HOW FAR  
YOU ARE IN THE DISEASE, WHETHER  
DRUGS ARE HELPING YOU, WHETHER  
THEY ARE NOT HELPING YOU--

**Leo:** HOW DO DOCS REACT TO THIS?  
I MEAN, I IMAGINE SOME DOCTORS  
SAY, WELL, NO, NO, IT'S AN ART,  
NOT A SCIENCE, IT TAKES INTUITION.

**Faisal Beg:** WELL, THIS IS--

**Leo:** OR DO SOME OF THEM SAY,  
NO, THIS MAKES SENSE, LET'S  
QUANTIFY IT?

**Faisal:** WELL, THIS IS REALLY  
CUTTING EDGE STATE OF ART, SO  
IT'S VERY MUCH IN THE RESEARCH  
AREA RIGHT NOW.

**Leo:** RIGHT.

**Faisal:** WE ARE NOT YET AT  
THE CLINICAL STAGE, SO I THINK  
THAT'LL BE --

**Leo:** (laughing) YOU HAVEN'T  
HAD A TALK TO THE DOCTORS YET.

**Faisal:** BUT I THINK THE

DOCTORS SEE PROMISE IN THIS.

**Leo:** THIS IS THE FUTURE.

**Faisal:** THERE IS A LOT OF  
PROMISE IN THIS.

**Leo:** AND IT'S NOT GOING TO  
PUT THEM OUT OF BUSINESS.  
IT'S GOING TO GIVE THEM MORE  
INFORMATION --

**Faisal:** ABSOLUTELY.

**Leo:** -- THAT CAN BE USEFUL  
TO THEM.

**Faisal:** THIS IS ACTUALLY  
PRESENTING THEM THE 3D  
INFORMATION IN A MUCH MORE EASY AND --

**Leo:** DIGESTIBLE FORM, YEAH.

**Faisal:** EXACTLY.

**Leo:** YOU GIVE ME A NUMBER --

**Faisal:** EXACTLY.

**Leo:** -- I CAN SAY, OH, WELL,  
I CAN SEE ON THIS SCALE --

**Faisal:** THAT'S RIGHT, THAT'S RIGHT.

**Leo:** -- THAT NUMBER'S A PROBLEM.

**Faisal:** EXACTLY.

**Leo:** YEAH, YEAH.

**Faisal:** SO, THERE'S ANOTHER  
PROBLEM I'M GOING TO DESCRIBE HERE.  
OF THE MILLIONS OF PROBLEMS  
THAT EXIST IN MEDICAL IMAGE  
ANALYSIS RIGHT NOW IS HOW DO  
YOU AVERAGE THREE BRAINS OR HOW  
DO YOU AVERAGE THREE HEARTS  
COMPARED TO AN AVERAGE HEART.  
IF YOU JUST TAKE THEM AND ADD

THEM UP LIKE WE DO NUMBERS --

**Leo:** RIGHT.

**Faisal:** -- YOU GET SOMETHING  
THAT DOESN'T LOOK LIKE THE  
HEART AT ALL.

**Leo:** AND IT DOESN'T WORK.

**Faisal:** IT DOESN'T WORK,  
THAT'S RIGHT.

**Leo:** (laughing) THAT'S NOT A  
HEART, THAT'S SOMETHING ELSE.

**Faisal:** YOU CAN'T DO IT, THAT'S RIGHT.

**Leo:** TOO MANY VALVES.

(laughing)

**Faisal:** THAT'S RIGHT.

SO, YOU KNOW, THE IDEA THAT WE  
CAME UP WITH - THIS IS THE WORK  
WITH MY ADVISOR WHO IS AT JOHNS  
HOPKINS - IS YOU TAKE THE  
TEMPLATE HEART AND YOU LOOK AT  
THE MOTION OF THESE POINTS SO  
THAT THEY WILL MAKE THE  
TEMPLATE DEFORM LOOK LIKE THE TARGET.

**Leo:** INTERESTING.

**Faisal:** SO THEN THE MOTION  
OF THOSE POINTS COORDS FOR THE  
TARGET SHAPE.

**Leo:** RIGHT.

**Faisal:** SO THEN IT'S LIKE  
BEING ON A GOLF COURSE.  
YOU ARE HERE --

**Leo:** YEAH.

**Faisal:** -- AND YOU WOULD  
LIKE TO HIT THE BALL AND MAKE

TO -- AND MAKE IT GO TO THE  
HOLE OVER THERE.

**Leo:** RIGHT.

**Faisal:** THEN THE INITIAL  
VELOCITY WITH WHICH YOU SEND  
THE BALL COORDS WITH THE ENTIRE PATH.

**Leo:** RIGHT.

**Faisal:** SO THAT'S--

**Leo:** THAT'S A COMPLICATED CALCULATION.

**Faisal:** YES, EXACTLY.

SO, THERE'S A BIG EQUATION  
THERE THAT I'M NOT GOING TO  
DESCRIBE, BUT THAT'S  
ESSENTIALLY THE IDEA.

**Leo:** RIGHT.

**Faisal:** YOU TAKE THE  
TEMPLATE AND DEFORM IT.

**Leo:** RIGHT.

**Faisal:** THE PROCESS OF  
DEFORMATION TELLS YOU WHERE IT GOES.

**Leo:** AND WE WANT TO QUANTIFY  
THE DEFORMATION.

**Faisal:** EXACTLY.

NOW, THESE VECTORS YOU CAN ADD  
AND SUBTRACT BECAUSE VECTORS  
ARE LIKE NUMBERS --

**Leo:** RIGHT, THEY'RE NUMBERS, YEAH.

**Faisal:** -- THAT YOU CAN ADD  
AND SUBTRACT.

SO YOU CAN TAKE A TEMPLATE  
HEART AND YOU CAN DEFORM IT,  
FIND THE INITIAL VECTORS TO A  
BUNCH OF THESE HEARTS --

**Leo:** RIGHT.

**Faisal:** -- AND YOU CAN  
COMPUTE THE AVERAGE VECTOR.

**Leo:** OF THE VECTOR.

NOW WE CAN DO AN AVERAGE --

**Faisal:** THAT'S RIGHT.

**Leo:** -- AND CREATE A TRUE  
AVERAGE HEART.

**Faisal:** THAT'S RIGHT.

**Leo:** AND YOU WOULD DO THAT  
FOR A LOT OF REASONS, FOR  
STATISTICAL PURPOSES AND SO  
FORTH, FOR --

**Faisal:** EXACTLY.

**Leo:** -- STUDIES ANALYSIS.

**Faisal:** EXACTLY.

SO, THE FIRST STATISTICAL  
THING YOU HAVE IS THE AVERAGE.

**Leo:** RIGHT.

**Faisal:** WHAT IS THE AVERAGE  
OF A POPULATION?

**Leo:** RIGHT.

**Faisal:** AND THEN IT CAN  
COMPUTE THINGS LIKE STANDARD  
DEVIATION, HOW THINGS CHANGE  
AROUND IN NORMAL --

**Leo:** VERY INTERESTING.

**Faisal:** -- AND DISEASE.  
SO, THAT'S EXACTLY WHAT THIS  
THING IS DOING.

SO, WE HAVE A VERY NEW  
BIOMEDICAL ENGINEERING PROGRAM  
AT SFU THAT IS -- HAS STRENGTHS

IN BIOMEDICAL IMAGING, IN  
PHOTONICS, IF SOMEBODY WANTS TO  
STUDY LASERS --

**Leo:** NEAT.

**Faisal:** -- SOMEBODY WANTS TO  
STUDY HOW TO IMAGE THINGS USING  
LASERS AND TREAT DIFFERENT  
DISEASE WITH LASERS,  
REHABILITATION AND ASSISTIVE  
DEVICES, WIRELESS DEVICES.  
YOU KNOW, A LOT OF THE  
TECHNOLOGIES COMING OUT ARE  
TRANSFERRING DATA WIRELESSLY  
FROM THE PERSON TO THE  
PHYSICIAN IN REALTIME.

**Leo:** IT'S AMAZING, ISN'T IT?

**Faisal:** SO, AND COMPUTERS  
ARE CHURNING OUT THESE NUMBERS  
AND DIAGNOSING WHETHER THIS  
PERSON IS ACTUALLY --

**Leo:** WOW.

**Faisal:** -- HAVING A DISEASE  
OR AN EPISODE THAT CAN BE  
TREATED RIGHT AWAY AND DEALT  
WITH RIGHT AWAY.

**Leo:** IF YOU WANT TO HAVE A  
HAND IN THIS CHANGING, EXCITING FIELD --

**Faisal:** THAT'S RIGHT.

**Leo:** -- SIMON FRASER  
UNIVERSITY SCHOOL OF  
ENGINEERING SCIENCE SOUNDS LIKE  
A GREAT PLACE TO BE --

**Faisal:** EXACTLY.

**Leo:** -- ESPECIALLY THAT NEW  
BIOMEDICAL ENGINEERING PROGRAM.

**Faisal:** ABSOLUTELY.

**Leo:** WOW.

**Faisal:** IT'S REALLY EXCITING  
STUFF, REALLY EXCITING TIMES,  
AND IT'S A CALL TO THE BEST AND  
THE BRIGHTEST STUDENTS TO COME  
OVER AND JOIN THE GROUP.

**Leo:** HELP CHANGE THE WORLD.

**Faisal:** HELP CHANGE THE WORLD.

**Leo:** FAISAL, IT'S GREAT TO  
TALK TO YOU ONCE AGAIN.

**Faisal:** THANK YOU.

**Leo:** THANKS FOR COMING BY.

[ Pop captions up ]

**Leo:** HE'S A PROFESSOR AT THE  
SCHOOL OF ENGINEERING SCIENCE  
AT SIMON FRASER UNIVERSITY AND  
IS LOOKING FOR A FEW BRIGHT  
HIGH SCHOOL STUDENTS WHO WANT  
TO GET INTO BIOMEDICAL ENGINEERING.

**Faisal:** ONLY THE BEST OF THE BRIGHTEST.

**Leo:** YOU'VE GOT TO BE SMART.

**Faisal:** YES.

**Leo:** BUT IF THAT INTRIGUED  
YOU, I MEAN I'M SURE IT DID,  
THAT'S SOMETHING YOU MIGHT WANT  
TO FIND OUT ABOUT.

THANK YOU SO MUCH.

**Faisal:** THANK YOU VERY MUCH.

THANK YOU.

**Leo:** ALL RIGHT, WE'RE GOING

TO TAKE A BREAK.

[ Pop captions down ]

**Leo:** RIGHT NOW THOUGH I WANT  
YOU TO TAKE A CLOSE-UP LOOK,  
SEE IF YOUR HUMAN INTUITION CAN  
FIGURE OUT WHAT THIS IS.

IT'S SOMETHING YOU MIGHT FIND  
AROUND OUR LAB.

I SEE SOME CLUES THERE, BUT I  
CAN'T QUITE PINPOINT IT.

WHAT DO YOU THINK?

TELL YOU WHAT, WE'LL ZOOM OUT  
AND FIND OUT WHEN

"THE LAB" CONTINUES.

STAY RIGHT HERE.

[ BLACK/COMMERCIAL ]

[ Pop captions down ]

**Leo Laporte:** WELL, LOOKY,  
LOOKY HERE, A CLOSE-UP OF  
SOMETHING YOU'D FIND AROUND  
"THE LAB."

WHAT COULD THAT BE?

IT'S GOT TO BE A JOYSTICK OF  
SOME KIND.

[ Pop captions up ]

**Leo:** OR, WELL, I WAS CLOSE.  
IT WAS A Rock Band Drum Kit, OKAY.

[ Pop captions down ]

**Sean:** IT'S A HALF.

**Leo:** A HALF POINT?

**Sean:** YOU'RE SIX AND A HALF NOW.

**Leo:** I COULD TELL IT WAS THE CONTROLLER.  
THE YELLOW THREW ME THOUGH.

I SHOULD HAVE KNOWN.

THAT SHOULD HAVE BEEN A  
GIVEAWAY.

DID YOU GET THAT? YOU DID?

SEE, THEY'RE SMART.

KATE, LET'S GET ANOTHER CALLER  
ON THE AIR HERE.

**Kate:** FANTASTIC.

WE'RE GOING TO GOLD COAST,  
QUEENSLAND, AND WE HAVE MICHAEL.

[ Pop captions up ]

**Leo:** HEY, WHAT A GREAT  
PICTURE FROM AUSTRALIA.

HI, MICHAEL.

**Michael:** HI, HOW ARE YOU  
DOING, LEO?

**Leo:** I'M GREAT.

WHAT CAN I DO FOR YOU TODAY?

**Michael:** YEAH, YES, I HAVE A  
BIT OF A PROBLEM ON A Mac.  
I'VE GOT A Mac OS X.

**Leo:** OKAY.

[ Pop captions down ]

**Michael:** AND I'VE CREATED  
SOME FOLDERS IN THE HARD DRIVE  
ON THE DESKTOP.

**Leo:** YEAH.

**Michael:** AND THEN I'VE  
CREATED SOME ALIASES TO THOSE  
AND THEN DRAGGED THOSE OUT ON  
THE DESKTOP.

**Leo:** GOOD, YEAH.

**Michael:** BUT WHAT I CAN'T DO

IS SEEM TO CREATE AN ICON FOR  
THEM, OTHER THAN JUST CHANGING  
THE COLOUR OF THE FONT.

SO, LIKE ON Windows YOU CAN--  
I'VE GOT Windows XP AS WELL.

**Leo:** MM-HMM.

**Michael:** AND YOU CAN RIGHT  
CLICK ON THE SHORTCUT AND  
CHANGE THE ICON TO MAKE YOUR OWN --

**Leo:** YEAH.

**Michael:** -- PICTURE.

AND I'M TRYING TO FIND A WAY TO  
DO THAT ON THE Mac ON AN ALIAS  
ON THE DESKTOP.

**Leo:** YOU CAN DO THAT WITH  
THE Get Info COMMAND.

IT'S ACTUALLY FAIRLY SIMILAR,  
FAIRLY ANALOGOUS TO THE  
COMMAND -- THE Properties  
COMMAND IN Windows.

**Michael:** OKAY.

**Leo:** SO, INSTEAD OF RIGHT  
CLICKING AND SELECTING  
Properties, YOU RIGHT CLICK AND  
YOU SELECT Get Info ON THAT AND  
THAT'LL GIVE YOU THIS LITTLE  
Info DIALOGUE.

AND IF YOU SEE THE PREVIEW,  
IT'LL BE A PREVIEW OF THE ICON.  
AND YOU CAN MOVE --

**Michael:** OKAY.

**Leo:** -- AN ICON FROM ONE TO  
THE OTHER AND REPLACE IT WITH

THE OTHER, I THINK.

LET'S SEE.

CAN I COPY THIS?

MAYBE YOU CAN'T.

**Sean:** YOU KNOW WHAT, IT'S UP  
AT THE TOP.

I KNOW YOU CAN DO IT WITH THE  
ONE IN THE TOP LEFT OF EACH BAR.  
YOU MOVE THOSE FROM ONE TO ONE.

**Leo:** OH, THIS ONE.

I HAVE TO USE THIS ONE.

**Sean:** YES.

**Leo:** OH, OKAY.

THERE YOU GO.

I WAS DOING THE WRONG-- I WAS  
DOING THE PREVIEW.

SO, I'M GOING TO DO IT FROM  
THIS -- THE LITTLE ONE AND COPY  
IT OVER TO THE OTHER LITTLE ONE.

SO, I DRAG IT OR?

**Sean:** COMMAND-C --

**Leo:** COMMAND-C?

**Sean:** -- AND COMMAND-V  
SHOULD BE ENOUGH.

**Leo:** COMMAND-C AND COMMAND-V.  
LET'S SEE IF HE'S RIGHT.

NO.

YOU KNOW, IT MAY BE THAT  
ALIASES CAN'T BE CHANGED, DO  
YOU THINK THAT'S POSSIBLE?

**Sean:** HM, THAT'S A POSSIBILITY.

**Leo:** HERE, LET'S TAKE A LOOK.  
NOW, THIS IS A REAL FILE AND

THIS IS AN ALIAS, AS YOU CAN SEE.

LET ME OPEN ANOTHER.

I'LL DO ANOTHER COMMAND-I AND

NOW I'VE GOT THE MUSIC FOLDER.

LET'S SEE IF I CAN TAKE THE

MUSIC ICON, COPY THAT AND PASTE

THAT ONTO MOVIES.

MAYBE I CAN'T.

WELL, I THOUGHT YOU COULD.

**Sean:** HM.

**Leo:** THIS WAS SOMETHING THAT

YOU COULD DO IN EARLIER

VERSIONS OF OS X.

IT LOOKS LIKE THEY HAVE TAKEN

THAT FEATURE OUT.

SO, YOU'RE RIGHT, ALTHOUGH I --

THERE IS A MORE COMPLICATED WAY

OF DOING IT, BUT I'M NOT SURE I

WANT TO GO INTO THAT IN GREAT

DETAIL AND THAT'S TO MODIFY THE

ACTUAL ICON RESOURCE.

**Michael:** YEAH.

**Leo:** LET ME RECOMMEND A

BETTER ANYWAY TO DO THIS AND

THIS IS SOMETHING FROM Panic

SOFTWARE THAT I REALLY LIKE

CALLED CandyBar.

NOW, YOU CAN TRY THIS FOR FREE

AND IT'S A LITTLE PRICEY.

I THINK IT SHOULDN'T BE SO EXPENSIVE.

[ Pop captions up ]

**Leo:** I THINK IT'S 30 OR \$40,

BUT IT ALLOWS YOU TO COMPLETELY

CUSTOMIZE THE ICONS WITH ICON SETS.

SO, WHAT'S COOL ABOUT CandyBar  
IS THE ICON SETS CAN REPLACE  
ALL THE ICONS.

YOU JUST CLICK Use These Icons  
AND IT REPLACES ALL THE ICONS  
WITH CUTE ICONS AND YOU CAN  
ALSO, I BELIEVE YOU CAN ALSO DO  
INDIVIDUAL ICONS AS WELL.

[ Pop captions down ]

**Leo:** IT EVEN HAS A LITTLE  
ICON EDITOR IF YOU WANT TO  
CREATE YOUR OWN ICONS, BUT IT'S  
NOT FREE.

IT'S FREE TO TRY, BUT NOT FREE  
TO USE.

YOU HAD A LINK IN THE SHOW  
NOTES TO A TECH NOTE, AN Apple  
TECH NOTE.

**Sean:** THERE'S A TECH NOTE FROM Apple.  
I'M ACTUALLY GETTING THIS TO  
WORK OVER HERE ON MY MACHINE.

**Leo:** IT WORKS THERE, SO IT'S JUST ME?

**Sean:** IT WORKS ON MY MACHINE.

**Leo:** OKAY, LET'S TRY IT AGAIN.

SO, I'M GONNA -- I HAVE MY  
MUSIC FOLDER OPEN AND I CLICK  
THAT LITTLE ICON IN THE UPPER LEFT?

**Sean:** YOU CLICK THE ONE.

**Leo:** OKAY.

**Sean:** UNTIL IT'S HIGHLIGHTED  
WITH BLUE AROUND IT.

**Leo:** YEAH, OKAY.

**Sean:** THEN COMMAND-C TO COPY  
THAT ICON.

**Leo:** AND THEN I DO COMMAND-C  
TO COPY AND IT DID COPY IT.

**Sean:** AND THEN GO TO THE  
OTHER ONE.

**Leo:** NOW I HIGHLIGHT THAT.

**Sean:** HIGHLIGHT IT BLUE AND  
THEN COMMAND--

**Leo:** OH, IT DID DO IT.  
DUOH - DUOH!

SO, MAYBE YOU WERE HAVING THE  
SAME ISSUE I-- OR DID IT?

**Sean:** THE KEY IS YOU HAVE TO  
HIGHLIGHT IT.

**Leo:** IT LOOKED LIKE IT DID IT.  
HA.

**Sean:** HM.

**Leo:** WELL, SEAN SAYS YOU CAN.  
OH, I'M NOT THE ADMINISTRATOR  
PROBABLY.

THAT'S PROBABLY WHAT IT IS.

**Sean:** OH, THAT'S IT.

**Leo:** THAT'S WHAT IT IS! AND  
I BET YOU THAT'S EXACTLY WHAT  
WAS HAPPENING TO YOU.

SO, HERE'S THE ONE THING THAT  
YOU DO HAVE TO BE.

YOU HAVE TO BE LOGGED IN,  
MICHAEL, AS THE ADMINISTRATOR  
ON THE Mac TO DO THAT.

**Michael:** OKAY.  
OKAY.

**Leo:** AND WE DON'T RECOMMEND,  
BY THE WAY, IN GENERAL  
OPERATING AS THE ADMINISTRATOR.  
YOU DO WANT TO BE -- DON'T  
NORMALLY WANT TO BE THE  
ADMINISTRATOR, BUT FOR THIS YOU  
WANT TO LOGIN AS THE  
ADMINISTRATOR.  
OR, EASY ENOUGH, JUST UPGRADE  
YOUR ACCOUNT TO AN  
ADMINISTRATOR ACCOUNT, LOGOUT  
AND LOG BACK IN AGAIN, MAKE  
THESE CHANGES, THEN LOGOUT AND  
THOSE WILL -- THE CHANGES WILL STAY.

**Michael:** ALL RIGHT.

**Leo:** AND THAT'S JUST TO  
PROTECT YOU FROM MODIFYING YOUR  
SYSTEM IF YOU'RE NOT AN ADMINISTRATOR.

**Michael:** OKAY.

THAT'S EXCELLENT.

**Leo:** THAT SOUNDS RIGHT.  
SO, AND WE'LL PUT THE Apple  
TECH NOTE IN THE SHOW NOTES  
BECAUSE Apple SAYS YOU CAN DO  
IT AND THAT'S WHAT FOOLED ME IS  
I THOUGHT, WELL, BOY, IF Apple  
SAYS-- YOU SHOULD BE-- IT USED  
TO BE ABLE TO DRAG AND DROP  
USED TO BE MUCH EASIER THAN IT  
IS NOW.  
I DON'T-- WAIT A MINUTE NOW, I  
JUST DID IT.

WATCH THIS ONE. (laughing)

OKAY, SO I -- THE WAY I DID IT  
WAS I TOOK THE BIG ICON AND I  
DRAGGED IT TO THE LITTLE ICON  
AND THEN IT CHANGED IT.  
AND THEN IF I WANT TO UNCHANGE  
IT, I SELECT THE BIG ICON AND  
PRESS BACKSPACE AND IT DELETES IT.  
SO, IT'S LIKE I'M COPYING IT ON TOP OF.  
SEE, IT DOESN'T WORK TO COPY IT  
THERE, YOU HAVE TO COPY IT OVER HERE.  
NOW, ISN'T THAT WEIRD?  
AND THEN IT DOES IT.  
LOOK AT THAT.  
OH, NOW I'M COPYING ALL THE FOLDER.  
I DON'T WA-- STOP, STOP!  
ANYWAY, AND TO CHANGE IT BACK,  
JUST CLICK IT AND PRESS BACKSPACE.  
SO, THERE WE GO, WE FIGURED IT  
OUT, IT JUST TOOK US ABOUT 18  
MAN HOURS AND 300 I.Q. POINTS.  
YOU TAKE-- YOU DRAG THE BIG  
PREVIEW TO THE LITTLE ICON AND  
THAT CHANGES IT. DUOH!  
THANK YOU, MICHAEL.

**Michael:** THANKS AND MERRY CHRISTMAS.

**Leo:** (laughing) MERRY CHRISTMAS TO YOU TOO.

**Michael:** OKAY.

**Leo:** TAKE CARE.

BYE-BYE.

I FEEL LIKE AN IDIOT.

OH, BUT I FEEL BETTER NOW  
BECAUSE WE'VE GOT MATCHING  
SHIRTS ONCE AGAIN.

**Ryan:** THERE YOU GO.

**Leo:** RYAN YEWELL, THE  
YEWELL'S JEWELS!

**Ryan:** YES, AND WE ARE ON THE  
Mac TODAY.

IT'S A REAL SIMPLE ONE.

IT'S CALLED iSquint.

[ Pop captions up ]

**Leo:** I LOVE iSquint, IT'S A  
GREAT PROGRAM.

**Ryan:** AND ESSENTIALLY IT'S  
JUST A REAL SIMPLE,  
STRAIGHTFORWARD CONVERTER FOR  
YOUR iPod.

**Leo:** MM-HMM.

**Ryan:** BECAUSE A LOT OF  
PEOPLE HAVE iPods THESE DAYS.

**Leo:** MM-HMM.

**Ryan:** AND SO WHAT I'M GOING  
TO DO IS I'M JUST GOING TO TAKE  
SOME OF THESE AVIs HERE WHICH  
WILL HAVE TO BE CONVERTED TO  
PLAY ON MY iPod.

**Leo:** YUP.

WON'T PLAY BACK AVIs.

[ Pop captions down ]

**Ryan:** I'M JUST GOING TO DRAG  
AND DROP.

I CAN SET THE QUALITIES.

SO I CAN DO IT HIGH, I CAN --

**Leo:** GO NUTS.

**Ryan:** LET'S GO NUTS.

IT'S GOING TO TAKE A WHILE,

WE'RE NOT GOING TO BE ABLE TO  
FINISH DURING THIS SEGMENT, BUT.

**Leo:** ALL RIGHT, WELL, YOU  
DON'T HAVE TO GO NUTS.

**Ryan:** AND I'VE TOLD IT TO  
ADD IT TO iTunes HERE.

**Leo:** IT DOES IT AUTOMATICALLY.

**Ryan:** IT DOES IT AUTOMATICALLY.  
SO, AND ALSO TO USE H.264 ENCODING.  
SO, I'M JUST GONNA HIT Start.

**Leo:** AND THAT'S IT.

**Ryan:** AND THEN YOU WALK AWAY.  
IT'S PRETTY QUICK, BUT  
DEPENDING ON HOW THE QUALITY IS  
AND HOW MANY FILES --

**Leo:** AND THE SIZE OF THE FILES.

**Ryan:** -- AND THE SIZE AND ET  
CETERA, ET CETERA, BUT YOU CAN  
SEE THE BAR IS MOVING.  
AND WHEN IT'S DONE, I'M GOING  
TO HAVE THESE AVIs IN MY iTunes  
AND READY TO GO ON MY iPod.

**Leo:** ISN'T THAT COOL?  
IT'S THE BABY BROTHER --

**Ryan:** YEAH, TO Visual--

**Leo:** -- THE FREE BROTHER TO  
VisualHub, WHICH EVERYBODY --

**Ryan:** VisualHub.

**Leo:** I LOVE VisualHub, BUT  
THIS IS A GREAT WAY TO GET STARTED.

**Ryan:** I'VE NOTICED THAT EVEN  
WHEN YOU GO TO THE iSquint  
PAGE, IT'S LIKE, HEY,

VisualHub, SO I THINK --

**Leo:** WELL, THEY WANT YOU TO BUY IT.

**Ryan:** -- THEY'RE TRYING TO  
UPSELL YOU, BUT, YOU KNOW, IT'S  
A REALLY GOOD FREE ONE HERE.  
IF IT'S --

**Leo:** FOR MOST PEOPLE THIS IS  
ALL YOU NEED, YEAH.

**Ryan:** SIMPLE,  
STRAIGHTFORWARD, EASY TO USE  
AND IT WORKS.

**Leo:** YEAH.

**Ryan:** THOSE ARE GREAT  
THINGS, AND FREE.

**Leo:** AND FREE.

**Ryan:** AND FREE.

**Leo:** BECAUSE THAT'S WHAT  
MAKES IT A JEWEL.

**Ryan:** THAT'S WHAT-- YEAH, IF  
IT'S NOT FREE, IT'S NOT A JEWEL.

[ Pop captions up ]

**Leo:** WHERE DO GET PEOPLE  
RYAN'S JEWELS?

**Ryan:** labwithleo.com.

GO THERE AND YOU'LL FIND THE  
JEWELS THERE.

**Leo:** COOL.

NOW, ARE YOU READY?

WE'RE GOING TO USE YOUR BRAIN,  
IF YOU DON'T MIND.

WE WANT TO DO-- BRIAN HAS BUILT  
A HOME BREWED 3D SCANNER.

[ Pop captions up ]

**Ryan:** FRANK HAS?

**Leo:** WHY DID I SAY BRIAN?

I DON'T EVEN KNOW WHO THAT IS.

FRANK.

AND WE'RE GOING TO SCAN YOUR BRAIN.

**Ryan:** REALLY?

**Leo:** MAYBE WE SHOULD SCAN

MINE TO FIND OUT WHAT'S WRONG WITH IT.

**Ryan:** IS IT-- DOES IT HAVE

ENOUGH POWERFUL MAGNIFICATION

TO DO THAT?

**Leo:** WELL, WE DON'T-- WE USE LASERS.

**Ryan:** AH.

**Leo:** IT'LL BE FINE.

**Ryan:** OKAY.

**Leo:** (laughing)

WE'VE ONLY LOST A COUPLE OF PATIENTS.

IT HEATS UP A LITTLE BIT.

**Ryan:** DO FAISAL AND HIM HOOK

UP AND KIND OF GET THIS ONE?

**Leo:** YEAH. YEAH.

**Ryan:** OKAY.

**Leo:** WE'RE GOING TO MAKE

YOUR OWN MRI AT HOME WHEN

"THE LAB"CONTINUES.

BUT FIRST THOUGH IT'S OUR QUICK

QUIZ QUESTION OF THE DAY.

WHAT'S THE NAME OF THE SI

UNIT - (whispering) What's an

SI unit? - FOR MEASURING

MAGNETIC FLUX DENSITY?

(whispering) What's magnetic flux density?

IS IT A TESLA, AN OHM, A WATT,

OR IS IT AN ALEX?

HMM, I DON'T KNOW.

LET'S THINK ABOUT IT.

WHEN WE COME BACK, WE'LL TALK  
ABOUT IT AS "THE LAB" CONTINUES.

[ Music ]

[ BLACK/COMMERCIAL ]

[ Pop captions down ]

(Theme music playing)

**Leo Laporte:** WELCOME BACK TO "THE LAB."

LEO LAPORTE HERE.

FROM digitalunderground.tv IT'S  
FRANK LINHARES AND TODAY WE'RE  
GOING TO SHOW YOU HOW TO MAKE  
YOUR OWN MRI AT HOME.

[ Pop captions up ]

**Frank Linhares:** NOT QUITE.

**Leo:** NO, THIS DOESN'T--

**Frank Linhares:** YOUR OWN 3D  
SCANNER, BUT NOT QUITE--

**Leo:** YEAH, THIS DOESN'T  
QUITE GO INTO THE BRAIN, BUT IT DOES--

**Frank:** NO.

**Leo:** BUT, YOU KNOW, IT'S KIND OF...

**Frank:** NO, THIS IS SURFACE  
ONLY, SURFACE SCANNING ONLY.

**Leo:** SO, WHAT IS A 3D  
SCANNER, FIRST OF ALL?

**Frank:** A LOT OF MOVIES NOW  
YOU GET A LOT OF 3D GRAPHICS, A  
LOT OF ANIMATED MOVIES LIKE  
"RATATOUILLE" AND  
"TOY STORY" AND STUFF LIKE

THAT, EVERYTHING IS A MODEL.  
GENERALLY 3D ARTISTS USED TO  
CREATE THOSE MODELS BY HAND.  
LIKE, LITERALLY PAINSTAKINGLY  
CREATE THE MODEL.  
NOW YOU CAN ACTUALLY TAKE  
PHYSICAL OBJECTS, SCAN THEM AND  
CONVERT THEM INTO AN ACTUAL  
MODEL, A VECTOR-BASED MODEL  
THAT YOU CAN THEN MANIPULATE IN  
A 3D PROGRAM.

**Leo:** SO, AND YOU CAN DO THIS  
AT HOME WITH A STANDARD --

**Frank:** STANDARD WEBCAM.

**Leo:** WEBCAM?

**Frank:** THAT'S RIGHT, A  
STANDARD WEBCAM.

THERE'S A BUNCH OF STUDENTS OUT  
AT A UNIVERSITY IN GERMANY THAT  
STARTED THIS PROJECT KIND OF AS  
A THEORY.

**Leo:** MM-HMM.

**Frank:** AND IT'S CALLED THE  
DAVID LASER SCANNER.

AND IT'S DAVID AS --

**Leo:** DAVID AND GOLIATH?

**Frank:** NOT DAVID AND GOLIATH.

**Leo:** OH.

**Frank:** A REALLY BAD GERMAN  
TRANSLATION, IT'S SIMPLE, UH --  
SIMPLE VIDEO SCANNING SYSTEM.  
I DON'T SPEAK GERMAN, BUT ANYWAY.

**Leo:** IT'S (German accent)

DAVID.

**Frank:** (German accent) IT'S DAVID.

[ Pop captions up ]

**Frank:** SO, THEY STARTED THIS  
AND IT'S 100% FREE.  
YOU CAN GO TO THEIR SITE,  
DOWNLOAD THE SOFTWARE AND THE  
FIRST THING YOU'RE GOING TO  
NEED IS, BESIDES A WEBCAM AND  
YOUR BASIC LASER LINE LEVEL --

**Leo:** OH, YOU NEED A LASER--

**Frank:** NEED A LASER.

**Leo:** IS IT A LASER POINTER OR IS IT...?

[ Pop captions down ]

**Frank:** NO, IT'S GOT TO BE  
ONE OF THOSE, YOU KNOW THE ONES  
YOU BOLT TO THE WALL THAT YOU CAN --

**Leo:** IT HAS TO BE FIXED.

**Frank:** IT'S GOT TO BE FIXED  
AND IT'S GOT TO ACTUALLY  
PRODUCE A PHYSICAL LINE, FLAT LINE.

**Leo:** SO THAT'S THE THING,  
IT'S NOT PRODUCING A POINT SOURCE --

**Frank:** NOT PRODUCING A POINT.

**Leo:** -- IT'S A LINE, OKAY.

**Frank:** THAT'S RIGHT.  
AND WITHIN THE SOFTWARE YOU  
PRINT OUT THE TWO BACK SHEETS.

**Leo:** AND THAT'S WHAT THESE  
ARE ON A WHITE BOARD.

**Frank:** THAT'S RIGHT.  
NOW, WHAT THESE THINGS, WHAT  
THE CAMERA ACTUALLY SEES, LIKE

YOU CAN SEE ON MY MACHINE HERE,  
IS IT'S ACTUALLY GOING TO USE  
THOSE AS CALIBRATION POINTS, RIGHT.

**Leo:** WHEN WE DO THIS IN THE  
STUDIO, WE ACTUALLY HAVE A BIG  
WALL WITH DOTS ON THE BACK OF IT.

**Frank:** THAT'S RIGHT.

YOU CAN-- THIS PROJECT, YOU CAN  
PRINT THOSE AS BIG AS YOU WANT --

**Leo:** YEAH.

**Frank:** -- AND SCAN IT THE  
EXACT SAME WAY.

**Leo:** YEAH, OKAY.

**Frank:** SO, THAT'S GOING TO  
USE IT AS REFERENCE POINTS.  
AND ONCE WE ACTUALLY CALIBRATE  
THE CAMERA, AND UNFORTUNATELY--

**Leo:** SO, YOU DO IT WITHOUT  
THE OBJECT FIRST.

**Frank:** FIRST YOU'RE GOING TO  
CALIBRATE.

NOW, I'M NOT GOING TO BE ABLE  
TO CALIBRATE IT BECAUSE --

**Leo:** THERE'S TOO MUCH LIGHT  
IN HERE.

**Frank:** THAT'S RIGHT, THERE'S  
WAY TOO MUCH LIGHT.

**Leo:** OKAY.

**Frank:** SO, ONCE YOU'RE DONE  
THE CALIBRATION, YOU KIND OF  
PLACE YOUR --

**Leo:** THEN PLACE VIC.

**Frank:** PLACE VICTOR THERE.

**Leo:** YOU PUT VIC IN THERE.

**Frank:** HE'S NOT GONNA --  
WELL, YOU KNOW WHAT, WE'LL SIT  
VIC UP, HOW DOES THAT SOUND,  
AND WE'LL KIND OF DO HIS UPPER TORSO.  
AND ONCE YOUR CAMERA IS  
CALIBRATED, YOU LITERALLY SIT  
BACK, TAKE A LASER IN COMPLETE DARKNESS -

**Leo:** BY HAND?

**Frank:** BY HAND IN COMPLETE  
DARKNESS AND JUST PASS THE  
LASER UP AND DOWN OVER VIC.

**Leo:** NOW, THE DARKNESS IS  
IMPORTANT BECAUSE YOU JUST WANT  
THE CAMERA TO REGISTER THE  
LASER LIGHT AND NOTHING ELSE.

**Frank:** THAT'S RIGHT, THAT'S  
ALL YOU WANT TO DO AND YOU'RE  
JUST GONNA -- IT WILL  
EVENTUALLY TELL YOU I'VE GOT  
ENOUGH PASSES.

**Leo:** SO, YOU KEEP GOING UP  
AND DOWN.

**Frank:** YOU KEEP GOING UP AND DOWN.  
SOMETIMES IT TAKES-- LIKE, WHAT  
I ACTUALLY ENDED UP WITH IS A  
CHERUB THAT MY WIFE HAD AT HOME.

**Leo:** LOOK AT THAT.  
THAT'S REALLY GOOD.

**Frank:** AND IT TOOK ME ABOUT  
15 MINUTES OF SCANNING.

**Leo:** HOW DOES-- DID YOU TURN  
THE OBJECT AS WELL?

**Frank:** THAT'S RIGHT, THAT'S  
THE OTHER -- YOU HAVE TO TURN IT IN -

**Leo:** ROTATE IT.

**Frank:** - THAT'S RIGHT, IN 15  
DEGREES KEEP TURNING IT --

**Leo:** OKAY.

**Frank:** -- AND THEN THE  
SOFTWARE PIECE IT IS ALL  
TOGETHER FOR YA.

**Leo:** SO, IT TOOK A WHILE TO DO THIS.

**Frank:** YEAH, IT TOOK A GOOD  
15 TO 20 MINUTES TO DO A FULL SCAN.

**Leo:** YEAH, BUT LOOK WHAT YOU  
GET OUT OF IT.

**Frank:** BUT I MEAN COMPARED  
TO, YOU KNOW, 3,000 DOLLAR FIXED --

**Leo:** I'M STUNNED.

**Frank:** -- MACHINES, I MEAN IT'S --

**Leo:** I'M STUNNED.

**Frank:** -- EASILY...

**Leo:** SO, THEY'VE DONE A LOT  
OF SOFTWARE TO SOMEHOW FIGURE  
OUT WHERE THEY SEE THAT LASER  
LIGHT, WHERE IT'S BEING  
DISTORTED AND HOW IT'S...

**Frank:** WHERE IT SEES THE  
LASER LIGHT, THAT'S RIGHT.  
YOU KNOW, YOU DON'T ACTUALLY  
NEED A LASER LIGHT.

YOU COULD USE LIKE A --

**Leo:** A THIN LIGHT SOURCE.

**Frank:** -- THIN STRING --

**Leo:** RIGHT.

**Frank:** -- AND JUST PASS IT  
OVER THE FRONT OF THE CAMERA SLOWLY.  
NOT AS GOOD AS A LASER THOUGH.

**Leo:** REALLY?

**Frank:** YEAH, YOU COULD.  
NOT A-- THEY DON'T RECOMMEND THAT.  
THAT IS POSSIBLE.

**Leo:** A LIGHT WOULD BE BETTER --

**Frank:** THAT'S RIGHT.

**Leo:** -- BECAUSE YOU'RE IN  
THE DARK AND ALL THAT.

**Frank:** THAT'S RIGHT, AND  
YOU'RE ACTUALLY GETTING THE  
LASER AND IT'S BOUNCING OFF  
VIC, FOR EXAMPLE.

**Leo:** WOW.

**Frank:** SO, IT'S A GREAT PROJECT.  
IT'S A GREAT-- A LOT OF FUN IF  
YOU'RE INTERESTED IN 3D, YOU  
HAVE A REALLY HARD TIME  
MODELING LIKE I DO, THIS IS A  
GREAT WAY TO ACTUALLY--

**Leo:** WELL, IF YOU'RE USING A  
3D MODELING PROGRAM --

**Frank:** YEAH.

**Leo:** -- AND YOU'D LIKE TO  
GET SOMETHING REAL IN THERE,  
LIKE YOUR SISTER, YOU COULD  
JUST -- SHE'D HAVE TO STAND  
VERY STILL THOUGH.

**Frank:** VERY STILL.

**Leo:** FOR 20 MINUTES.

[ Pop captions up ]

**Frank:** THERE'S-- I MEAN,  
WE'LL HAVE THE LINKS IN THE  
SHOW NOTES, BUT THEY HAVE A  
GALLERY PAGE ON THEIR SITE OF  
JUST TONS OF STUFF THAT PEOPLE  
HAVE SCANNED OVER TIME --

**Leo:** WHAT A NEAT IDEA.

**Frank:** -- INCLUDING PEOPLE,  
LARGE OBJECTS, CARS.

**Leo:** RIGHT.

**Frank:** YOU NAME IT,  
EVERYTHING -- EVERYTHING WILL  
ACTUALLY BE...

[ Pop captions down ]

**Leo:** IT'S (German accent)  
DAVID.

**Frank:** YEAH, (German accent)  
DAVID.

**Leo:** AND WE'LL HAVE NOTES  
WHERE TO GET THE SOFTWARE AND  
HOW TO DO ALL OF THIS ON OUR  
WEBPAGE, labwithleo.com.  
WHAT A NEAT PROJECT.  
I CAN'T BELIEVE YOU GOT THAT  
LITTLE CHERUB THAT'S SO BEAUTIFUL.  
THERE'S THE WEBSITE.

**Frank:** THERE'S THE WEBSITE  
WITH A BUNCH OF GALLERIES AND  
SOME OF THE PICTURES THAT I HAD --

**Leo:** HEY, THERE'S YOURS.

**Frank:** YEAH, THAT I UPLOADED  
TO THEM.

[ Pop captions up ]

**Leo:** YOU GAVE THEM YOURS.

**Frank:** YEAH.

WELL, THEY WERE PRETTY EXCITED  
WHEN I TOLD THEM ABOUT WHAT WE  
WERE DOING, WHAT WE WERE DOING HERE.

**Leo:** AND LOOK HOW GOOD IT  
LOOKS, THEY WERE IMPRESSED.

(German accent)

david-laserscanner.com.

**Frank:** david-laserscanner.

**Leo:** AND THEY HAVE ALL THE  
DETAILS ON HOW TO DO THAT.  
ISN'T THAT NEAT?

THANK YOU, FRANK LINHARES.

**Frank:** NO PROBLEM.

**Leo:** digitalunderground.tv,

THAT'S THE PLACE TO GO TO SEE  
STUFF LIKE THIS AND A WHOLE LOT MORE.  
IT'S A GREAT VIDEO PODCAST AND WEBSITE.

digitalunderground.tv.

WE THANK YOU FOR BEING HERE, FRANK.  
MORE OF YOUR CALLS COMING UP IN  
JUST A BIT AS "THE LAB WITH LEO" CONTINUES.  
CAN YOU-- WOULD YOU SCAN MY HEAD?

**Frank:** ABSOLUTELY.

**Leo:** OKAY.

**Frank:** LET'S...

[ Music ]

[ BLACK/COMMERCIAL ]

[ Pop captions down ]

(Theme music playing)

**Kate Abraham:** HEY, WELCOME  
BACK TO "THE LAB WITH LEO."

I'M KATE ABRAHAM, AND NOW IT'S TIME FOR MY TIP OF THE DAY. NOW, I AM A BIG, BIG FAN OF PHOTO SITES, BUT SOMETIMES AFTER A WHILE THEY'RE A LITTLE BIT SUBJECTIVE, YOU JUST SIT THERE AND YOU ABSORB THEM. THE COOL THING IS THERE'S A NEW SITE CALLED [likebetter.com](http://likebetter.com) AND WHAT HAPPENS, IT OFFERS YOU TWO PICTURES AND YOU CHOOSE YOUR FAVOURITE.

[ Pop captions up ]

**Kate:** SO, THIS IS [likebetter.com](http://likebetter.com).

SO, FOR INSTANCE, HERE I'M LOOKING AT PICTURE OF A GOLF BALL OR A GUY IN A CANOE.

I LIKE THE GUY IN THE CANOE.

**Leo:** (laughing)

**Kate:** GOING THROUGH, DO I LIKE A GUN OR DO I LIKE THIS KIND OF BEAVERY THING?

I LIKE THE BEAVERY THING.

[ Pop captions down ]

**Kate:** AND THE COOL THING IS EVENTUALLY ONCE YOU HIT ENOUGH OF THEM, THIS LITTLE PINK BRAIN HERE STARTS TO PULSATE, YOU CLICK ON THIS, AND THEN WHAT HAPPENS, IT TELLS YOU WHAT THE BRAIN THINKS ABOUT YOUR PERSONALITY JUDGING FROM WHAT YOU'VE DONE WITH THE PICTURES.

**Leo:** AND WHAT DOES IT THINK

ABOUT YOU?

**Kate:** IT SAYS THAT WHEN I'M  
IN A GROUP I TEND TO LET OTHERS  
TAKE THE LEAD.

**Leo:** IS THAT TRUE?

**Kate:** I DON'T THINK SO.

**Leo:** NO.

**Kate:** (laughing)

**Leo:** SO NOW YOU SAY 'NO',  
RIGHT, YOU'RE GOING TO TEACH IT.

**Kate:** SO, YOU SAY 'NO' AND  
THEN WHAT HAPPENS IS...

**Leo:** IT WILL TEACH IT.

**Kate:** YEAH, SO IT'S A BIT OF  
A TIME WASTING SITE, BUT THE  
COOL THING IS IT ACTUALLY HAS CHANNELS.

**Leo:** IT'S REALLY FUN.

**Kate:** AND WHAT YOU CAN DO IS  
YOU CAN SELECT THE PHOTOGRAPHS,  
FOR INSTANCE, YOU'RE MOST  
INTERESTED IN.

SO, I COULD SELECT MOVIES OR  
PUPPIES OR THE FUNNIEST, FOR INSTANCE.

**Leo:** (laughing)

**Kate:** IT'S JUST A TIME  
WASTER, BUT THE PICTURES ARE PRETTY.

**Leo:** I THINK THERE MIGHT BE  
SOMETHING THOUGH TO, YOU KNOW,  
AS IT LEARNS THAT CERTAIN  
PEOPLE LIKES CERTAIN THINGS.

**Kate:** YEAH.

**Leo:** PEOPLE WHO LIKE GOLF  
BALLS LIKE TO TAKE CHARGE.

**Kate:** EXACTLY.

PEOPLE WHO LIKE GUYS IN CANOES  
LIKE TO SIT BACK.

**Leo:** SO YOU BLEW IT, YOU  
SHOULD HAVE--

**Kate:** THAT'S THE PROBLEM.

**Leo:** THAT'S-- YOU WEREN'T  
REALLY PAYING ATTENTION.

**Kate:** I WASN'T.

**Leo:** ALL RIGHT, I'M JUST  
GOING TO SCAN YOU HERE REAL QUICKLY.

**Kate:** ARE YOU?

**Leo:** YEAH, I WANT TO TAKE--  
I WANT TO TAKE YOU HOME WITH ME.  
LOOK AT THAT, OKAY.

**Kate:** I'VE HEARD THAT BEFORE. (laughing)

**Leo:** FRANK, DID YOU GET THAT?  
WE'RE GOING TO MAKE A VIRTUAL KATE.

**Kate:** EXACTLY.

**Leo:** NO, THERE'S NO SUCH --  
NO SUCH THING, ONLY THE REAL THING.  
LET'S GET A CALL ON THE AIR HERE.

**Kate:** ABSOLUTELY.  
WE'RE GOING TO MONTREAL IN  
QUEBEC AND WE HAVE ALIM ON THE LINE.

**Leo:** ALL RIGHT.  
HELLO, ALIM.

**Alim:** HI, LEO, HOW'S IT GOING?

**Leo:** I'M GREAT.  
HOW ARE YOU TODAY?

**Alim:** NOT BAD.  
THE SECOND TIME-- A COUPLE  
YEARS AGO YOU HELPED ME A LOT

THE FIRST TIME AROUND.

HOPEFULLY YOU'LL BE ABLE TO  
HELP ME AROUND THE SECOND TIME.

**Leo:** WELL, EVEN IF I DON'T,  
AT LEAST I'M BATTIN' 500.

**Alim:** THERE YOU GO.

**Leo:** SO, WHAT IS YOUR TALE OF WOE?

[ Pop captions up ]

**Alim:** WELL, I KNOW THIS IS  
SOMETHING THAT'S BECOMING MORE  
AND MORE COMMON, PEOPLE ARE  
HOOKING UP THEIR COMPUTERS TO  
LARGER SCREEN TVs.

YOU KNOW, 32 --

**Leo:** YES.

**Alim:** -- 42, 37 INCHES.

SO, MY LAPTOP RIGHT NOW IS  
CONNECTED TO A 32-INCH SCREEN --

**Leo:** (laughing)

**Alim:** -- THROUGH THE VGA  
PORT OF MY LAPTOP.

**Leo:** OKAY.

**Alim:** I WAS WONDERING IF  
THERE WERE ANY OPTIMIZERS OR  
SOME TYPE OF SIMULATOR THAT  
WOULD MAKE MY -- THE CONTENTS  
ON MY LAPTOP, YOU KNOW, FIT  
BETTER ON MY -- ON MY SCREEN  
(indiscernible).

**Leo:** (talking over caller)

WHAT'S HAPPENING?

DOES IT LOOK A LITTLE SMUSHY?

DOES IT LOOK A LITTLE SMUSHY ON

THE SCREEN?

WHAT IS THE--

[ Pop captions down ]

**Alim:** NOTHING LOOKS SMUSHY.

WHAT'S HAPPENING IS THAT IT'S  
REALLY HARD TO READ.

**Leo:** OH, IT'S TOO SMALL.

**Alim:** LET'S SAY FROM A  
DISTANCE, YOU KNOW WHAT THEY  
HAVE, THEY TALL IT 10-FOOT GUI  
THAT A LOT OF SYSTEMS ARE  
COMING OUT WITH --

**Leo:** RIGHT.

**Alim:** -- LIKE Windows Media Center.

**Leo:** SO YOU CAN SIT BACK, RIGHT.

YEAH, Microsoft DID THAT WITH  
THEIR WebTV, NOW IT'S CALLED I  
THINK MSN TV.

EVERYTHING HAD BIG BUTTONS ON  
IT, RIGHT?

**Alim:** EXACTLY, EXACTLY.

**Leo:** AND IT WAS VERY EASY,  
BUT I MEAN AFTER A WHILE YOU  
KIND OF GET SICK OF IT.

LET ME ASK YOU WHAT RESOLUTION  
ARE YOU RUNNING AT?

**Alim:** GOOD QUESTION.

I THINK IT'S 1280 x HONESTLY  
I'M NOT EVEN SURE.

[ Pop captions up ]

**Leo:** IS IT AN LCD TV OR A CRT?

**Alim:** YEAH.

**Leo:** IT'S AN LCD.

**Alim:** IT'S AN LCD TV,  
32-INCH LCD TV.

**Leo:** SO, YOU'LL GET THE BEST  
RESULTS IF YOU RUN IT THE  
NATIVE RESOLUTION OF THE TV.  
DO YOU KNOW WHAT THAT--

[ Pop captions down ]

**Alim:** EXACTLY, YEAH.

OH, I DID THAT, I DID JUST THAT  
(indiscernible)

**Leo:** (talking over caller)

AND THAT'S WHY IT'S SO SMALL,  
BECAUSE THE NATIVE RESOLUTION  
IS PROBABLY PRETTY HIGH.  
IT'S PROBABLY 1280 x 1080 OR  
SOMETHING LIKE THAT.

**Alim:** RIGHT.

**Leo:** YEAH, I MEAN IF WE LOOK  
AT-- THIS IS MSN TV.  
YOU CAN SEE EVERYTHING'S-- NOW,  
THIS IS DESIGNED FOR A CRT TUBE  
THAT DOESN'T HAVE MUCH  
RESOLUTION, SO THE BUTTONS ARE  
REAL BIG AND THE TEXT IS REAL  
BIG BECAUSE IT'S -- BECAUSE  
THEY FIGURE, YOU KNOW, YOU'RE  
PROBABLY RUNNING THIS ON A--  
BUT YOU'RE RUNNING ON A  
HIGH-DEF TV WITH A LOT OF RESOLUTION.  
ESSENTIALLY YOU'RE USING A  
32-INCH MONITOR.

**Alim:** EXACTLY.

**Leo:** SO, THERE'S A COUPLE OF

THINGS YOU COULD DO.

WHAT I WOULD SUGGEST IS, YOU  
KNOW, CHANGING YOUR USER INTERFACE.

ARE YOU USING Windows OR Mac?

**Alim:** I'M USING Vista.

**Leo:** OKAY.

SO, I'M GOING TO GO TO Vista HERE.

AND IF YOU PERSONALIZE Vista,

YOU KNOW, YOU GO TO THE

Appearances, THERE'S A NUMBER

OF THINGS YOU CAN DO TO IMPROVE Vista.

ACTUALLY, IT TURNS OUT Vista

HAS SOME VERY NICE FEATURES

THAT WILL REALLY HELP YOU.

FOR INSTANCE, YOU CAN CHANGE

THE DPI OF THE CHARACTERS OF

THE TEXT.

AND --

**Alim:** I'VE TRIED THAT.

**Leo:** -- YOU COULD DO IT

BEFORE IN Windows XP, BUT IT

DIDN'T DO A VERY GOOD JOB.

IT DOES A MUCH BETTER JOB NOW.

I'M JUST TRYING TO FIGURE OUT

WHERE I DO THAT HERE.

I CAN'T FIND IT, BUT I KNOW

IT'S IN HERE SOMEWHERE.

MAYBE IT'S IN THE THEME.

YOU ALSO MIGHT WANT TO CHOOSE A

THEME THAT SUPPORTS-- AND THERE

ARE OTHER THEMES ONLINE THAT

SUPPORTS BIGGER TYPE, BIGGER

BUTTONS, LARGER TEXT.

YOU KNOW, YOU CHANGE THE APPEARANCE SETTINGS, IN OTHER WORDS.

**Alim:** RIGHT.

**Leo:** IN FACT, IF YOU GO THROUGH THE APPEARANCE SETTINGS AND CHANGE THE THINGS THAT HAVE TEXT IN THEM, FOR INSTANCE, LIKE THE TITLE BAR, AND INCREASE THE SIZE OF THE FONT, EVERYTHING IN HERE CAN BE INCREASED. YOU'LL HAVE TO DESIGN ESSENTIALLY YOUR OWN UI.

**Alim:** RIGHT.

**Leo:** BUT YOU CAN-- BUT Vista IS VERY COMPATIBLE -- VERY CUSTOMIZABLE IN THAT RESPECT.

**Alim:** OKAY.

**Leo:** CERTAINLY USE CLEAR TYPE. HOW BIG IS THE DPI THAT YOU'RE USING?

**Alim:** UM...

**Leo:** WHAT ARE YOU--

**Alim:** I'M NOT EVEN SURE RIGHT NOW.

**Leo:** TRY A LOWER DPI, NOT A HIGHER ONE, RIGHT?

**Alim:** OKAY, AND THAT SHOULD HELP OUT?

**Leo:** OH, YEAH, IT'LL HELP OUT A LOT.

**Alim:** YOU DON'T KNOW OF ANY PROGRAMS? DO YOU KNOW OF ANY, LIKE, STANDALONE PROGRAMS, THAT WOULD ACTU-- LIKE A WEB BROWSER THAT WOULD ACTUALLY...?

**Leo:** I DON'T KNOW OF ANY  
BR-- I MEAN, YOU CAN ALSO  
MODIFY YOUR WEB BROWSERS--  
ARE YOU USING Firefox?

**Alim:** NO, I'M NOT.  
I'M USING Internet Explorer.

**Leo:** Internet Explorer?  
BOTH Firefox AND Internet  
Explorer ALLOW YOU, IN THEIR  
SETTINGS, TO GIVE -- TO CHANGE  
THE DEFAULT CSS.

**Alim:** OKAY.

**Leo:** AND YOU CAN ACTUALLY  
CREATE A CSS, I THINK YOU CAN  
DO IT IN Internet Explorer.  
YOU CAN DO IT, CERTAINLY YOU  
CAN DO IT IN Firefox.

YOU CAN USE A CSS WHERE YOU  
DEFINE A DEFAULT TYPEFACE  
THAT'S 23 POINTS OR SOMETHING  
THAT'S REALLY BIG.

AND WHAT'LL HAPPEN IS ALL THE  
WEBSITES WILL GET BIGGER.  
THEY MAY NOT ALL LOOK GREAT.

**Alim:** RIGHT.

**Leo:** I MEAN, YOU KNOW, YOU  
COULD DO THAT BY HAND BY JUST  
INCREASING THE FONT SIZE, BUT  
THE PROBLEM IS YOU DO THAT ON  
SOME SITES YOU INCREASE THE  
FONT SIZE AND THE WHOLE SITE  
FALLS APART, RIGHT? I MEAN, I'VE DONE THAT HERE  
NOW.

THIS IS-- AND ACTUALLY THIS IS  
A WELL-DESIGNED SITE, IT DOES  
VERY WELL WITH A LAR-- LOOK AT  
THAT, THAT'S ACTUALLY REALLY GOOD.

THIS IS THE Stardock SITE.

I'M NOT SURPRISED.

THIS IS THE OTHER THING I WOULD RECOMMEND.

Stardock MAKES Windows

CUSTOMIZATION SOFTWARE AND THEY

DO A REALLY GOOD JOB, Object

Desktop AND STUFF.

[ Pop captions up ]

**Leo:** AND I WOULD LOOK TO SEE

IF -- I BET YOU THEY HAVE A

Object Desktop DESIGNED FOR,

YOU KNOW, EVERYTHING IS BIGGER.

THERE IS A LOT OF DIFFERENT

DESKTOPS IN HERE.

SO, THEY MAKE WinCustomize,

WindowsBlinds.

[ Pop captions down ]

**Leo:** YOU KNOW, WindowsBlinds

ARE PROBABLY THE FIRST PLACE

I'D LOOK AND LOOK FOR AN EXTRA

LARGE WindowsBlind DESKTOP.

SEE HOW THEY CUSTOMIZE EVERYTHING?

IN OTHER WORDS, YOU'RE GOING TO

DO THIS BY HAND.

YOU COULD DO A ONESIE, TWOSIE

WITH PERHAPS YOU COULD FIND

APPLICATIONS WITH BIG BUTTONS,

BUT MY SUGGESTION IS TO CHANGE

THE WHOLE USER INTERFACE TO

REFLECT THIS -- YOU KNOW, THAT  
YOU WANT TO HAVE THESE BUTTONS  
BE A LOT BIGGER.

Firefox WILL ALLOW YOU TO  
DOWNLOAD A NEW SKIN AND I'M  
SURE THERE ARE BIG BUTTON SKINS IN Firefox.  
THERE'S ALSO SETTINGS IN EVERY  
PROGRAM TO MAKE THE ICONS  
BIGGER AND STUFF LIKE THAT.  
I THINK YOU'RE JUST GOING TO  
HAVE TO DO IT BIT BY BIT.

**Alim:** RIGHT.

**Leo:** YOU KNOW, HERE WE CAN  
CHANGE THE TOOLBAR AND INCREASE  
THE SIZE OF THE BUTTONS, THINGS  
LIKE THAT.

I THINK YOU'RE GOING TO HAVE TO  
DO IT BIT BY BIT.

**Alim:** PERFECT, I'LL HAVE TO  
LOOK INTO THAT.

THANK YOU SO MUCH.

**Leo:** YEAH, IT'S A GREAT  
PROBLEM TO HAVE, (laughing) A  
32-INCH DISPLAY.

**Alim:** WELL, I TELL YOU, IT'S  
A FUN PROBLEM TO HAVE WHEN  
YOU'RE STANDING ABOUT 10 FEET  
AWAY FROM YOUR -- FROM YOUR TV  
(indiscernible).

**Leo:** (talking over caller)

YEAH, YOU CAN'T READ ANYTHING,  
I UNDERSTAND.

I CAN-- SOMETIMES ON A-- I HAVE

A 30-INCH SCREEN AT HOME, I'M  
SITTING ACROSS FROM IT I CAN'T  
READ IT BECAUSE EVERYTHING DOES  
GET SMALL WHEN YOU INCREASE THE  
RESOLUTION, ISN'T THAT FUNNY?  
IT SEEMS LIKE IT WOULD GO THE  
OTHER WAY, BUT IT'S BECAUSE THE  
RESOLUTION IS SO HIGH.  
THAT'S WHY CHANGING TO A LOWER  
DOTS PER INCH, 72 DOTS PER INCH  
OR LESS COULD REALLY MAKE A BIG DIFFERENCE.  
THAT'S THE FIRST THING I WOULD  
DO IN Windows, REALLY LOWER  
THAT NUMBER TO AS LOW AS YOU  
CAN, SEE WHAT HAPPENS.

SEAN, SEAN CARRUTHERS IS HERE  
WITH HIS SHINY, SHINY STUFF.  
WHAT HAVE YOU GOT?

[ Pop captions up ]

**Sean:** YES.

WELL, I'VE GOT A PROTECTIVE  
CASE FOR AN iPod HERE.

**Leo:** I HAVE ONE OF THESE AND  
MY KIDS LOVE THEM.

**Sean:** YEAH?

**Leo:** THEY FIGHT OVER THEM.

**Sean:** WELL, LET'S EVERYONE  
ELSE IN ON THE SECRET OF THIS  
PARTICULAR CASE.

**Leo:** THIS IS THE iMainGo.

**Sean:** IT'S THE iMainGo.

IT'S ABOUT 40 BUCKS AND IT'S  
NOT JUST A PROTECTIVE CASE,

IT'S ALSO A SPEAKER DOCK.

**Leo:** ISN'T THAT COOL?

SO, AND IT WORKS WITH ALL THE iPods.

**Sean:** MM-HMM.

**Leo:** YOU JUST HOOK IT UP TO  
THE SOUND THERE.

**Sean:** YEAH.

**Leo:** YOU TURN IT ON.

[ Pop captions down ]

**Sean:** AND IT HAS LITTLE  
ADAPTERS HERE AS WELL IN CASE  
YOU WANT TO PUT A DIFFERENT  
SIZED ONE IN THERE, SO.

**Leo:** YOU KNOW, WHAT'S NICE  
IS IT'S PRETTY STIFF, BUT LOOK  
ON THE BACK.

**Sean:** YEAH, IT'S GOT THOSE  
LITTLE SPEAKERS IN THERE.  
SO, IF YOU PRESS Play ON THERE,  
WE SHOULD HEAR SOMETHING FAIRLY QUICKLY.

(Theme music playing)

**Leo:** NOW, IT'S NOT HI-FI.

**Sean:** IT'S NOT HI-FI, BUT  
FOR SOMETHING SO SMALL THE  
SOUND IS SURPRISINGLY GOOD.

**Leo:** AND I USE IT FOR  
LISTENING TO BOOKS AND STUFF  
BECAUSE, YOU KNOW, I JUST TAKE  
IT WITH ME.  
INSTEAD OF TAKING A BIG SET OF  
SPEAKERS WITH ME TO THE HOTEL  
ROOM, I CAN LISTEN TO BOOKS  
LIKE THIS.

**Sean:** MM-HMM.

**Leo:** AND, LOOK, THEY HAVE  
NICE COLOURS.

**Sean:** YEAH.

**Leo:** HOW MUCH IS THIS?

**Sean:** IT'S \$40 FOR THAT.

**Leo:** IT'S GOOD.

**Sean:** AND AS YOU SAID, IT  
DOES COME IN A COUPLE OF  
DIFFERENT COLOURS.

IT SOUNDS PRETTY GOOD, IT'S COMPACT --

**Leo:** I LIKE THE PROTECTIVE LAYER.

**Sean:** -- AND IT DOES HAVE A  
PROTECTIVE LAYER IN THERE,  
WHICH IS REALLY NICE.

**Leo:** WHAT'S NEGATIVE?

**Sean:** IT'S A BIT HEAVY FOR A CASE.

**Leo:** HEAVY AND BIG.

**Sean:** HEAVY AND BIG --

**Leo:** IT'S GOT TO HAVE  
BATTERIES AND SPEAKERS.

**Sean:** -- FOR A PROTECTIVE CASE.

**Leo:** YEAH.

**Sean:** BUT WITH THE SPEAKERS,  
IT'S NOT THAT BAD.  
AND IT IS A BIT AWKWARD TO GET  
INTO THE BATTERY COMPARTMENT.  
AND AS YOU'RE FINDING OUT RIGHT THERE...

**Leo:** IT DOESN'T STAND UP.

**Sean:** YEAH.

**Leo:** I'M TRYIN'.

**Sean:** THAT'S MY iPod IN  
THERE, MAN.

**Leo:** (laughing) NOW I GOT IT.

**Sean:** IT'S STANDING UP OKAY,  
BUT, YEAH, IT IS --

**Leo:** IT'S NOT EXACTLY MADE  
TO STAND UP, YEAH.

**Sean:** IT WIGGLES.

**Leo:** GO AHEAD, KNOCK IT OVER.  
I JUST KEEP IT WITH ME LIKE THIS.  
IT'S LIKE HAVING A LITTLE--

**Sean:** YEAH.

**Leo:** YOU KNOW WHAT IT IS,  
IT'S LIKE AN OLD-- MAYBE  
BECAUSE I'M AN OLD GUY, IT'S  
LIKE AN F-- AN OLD AM RADIO  
THAT YOU CARRY WITH YOU.

**Sean:** YOU GOT THE WRIST STRAP.

**Leo:** " MEET THE SWINGER,  
POLAROID SWINGER "  
THANK YOU.

THAT'S iMainGo,  
OUR SHINY OF THE DAY.

**Sean:** YES, SIR.

[ Pop captions up ]

**Leo:** WE'LL TAKE A BREAK,  
COME BACK IN JUST A LITTLE WITH  
AKASH SABLOK.

HE'S GOT GADGETS GALORE, BIG  
AND SMALL, TOYS AND GAMES.  
YOU STAY RIGHT HERE.

**Sean:** GADGETS ARE MY TURF, MAN.

**Leo:** WAIT A MINUTE, NO  
FIGHTING, YOU GUYS.  
RIGHT NOW THOUGH, ONE CHANCE --

ONE MORE CHANCE TO TAKE OUR  
QUICK QUIZ QUESTION OF THE DAY.  
ARE YOU READY?

**Sean:** I AM.

[ Pop captions down ]

**Leo:** WHAT'S THE NAME OF THE  
SI UNIT FOR MEASURING MAGNETIC  
FLUX DENSITY: TESLA, OHM, WATT,  
THE ALEX?  
WHAT'S SI STAND FOR?

**Sean:** UH --

**Leo:** SCIENTIFIC?

**Sean:** -- STANDARD  
INTERNATIONAL UNIT.

**Leo:** STANDARD INTERNATIONAL  
UNIT, ALL RIGHT.  
DO YOU KNOW WHAT THE ANSWER IS  
TO THAT?  
I'LL TELL YOU WHEN  
"THE LAB" CONTINUES.

[ Music ]

[ BLACK/COMMERCIAL ]

[ Pop captions up ]

**Leo Laporte:** WELCOME BACK TO "THE LAB."  
BEFORE THE BREAK WE ASKED YOU  
WHAT'S THE UNIT OF MAGNETIC  
FLUX DENSITY?  
IT'S GOT TO BE TESLA.  
"BZZZ, BZZZ."  
HE WAS THE SCIENTIST WHO LIKED  
TO PLAY WITH ELECTRICITY.  
AKASH SABLOK IS THE GURU WHO  
LIKES TO PLAY WITH GADGETS.

HE'S GOT A LOT OF THEM HERE FOR  
US, TOYS FOR YOUNG AND OLD.  
GOOD TO HAVE YOU BACK, WELCOME.

[ Pop captions up ]

**Akash:** OH, IT'S NICE TO BE  
BACK, AND HERE ARE SOME OF THE TOYS.  
IT WAS HARD TO BRING THEM HERE  
BECAUSE I SPENT MOST OF LAST  
NIGHT PLAYING WITH THESE THINGS.

[ Pop captions down ]

**Leo:** DO YOU HAVE KIDS?

**Akash:** YES, I-- WELL, I HAVE  
A KID, HE'S -- I HAVE A BOY  
WHO'S TWO MONTHS OLD.

[ Pop captions up ]

**Leo:** OH, WELL, SEE, HE'S TOO  
YOUNG TO REALLY ENJOY THESE.

**Akash:** YEAH, SO I'M TESTING  
IT OUT FOR HIM, YOU SEE, SO.

**Leo:** YES, WE'LL HAVE TO --  
WE'LL HAVE TO TRY THESE FOR OURSELVES.

**Akash:** EXACTLY.

[ Pop captions down ]

**Leo:** START WITH MONOPOLY.

**Akash:** YEAH.

**Leo:** THIS HAS CHANGED A  
LITTLE BIT SINCE I WAS A KID.

**Akash:** THIS GAME HAS BEEN  
AROUND FOR A LONG TIME.

**Leo:** HOW CAN YOU MAKE AN  
ELECTRONIC MONOPOLY?

**Akash:** THIS IS AN ELECTRONIC  
BANKING EDITION.

SO, IT'S STILL PLAYED IN THE  
SAME WAY WITH THE DICE AND  
EVERYTHING AND YOUR PLAYERS.

**Leo:** MM-HMM.

**Akash:** IT'S GOT SOME REALLY  
NEAT PLAYERS IN IT, ESPECIALLY  
IT'S GOT A HOCKEY PLAYER IN IT NOW.

[ Pop captions up ]

**Leo:** THIS IS THE CANADIAN EDITION.

**Akash:** THIS IS THE CANADIAN EDITION.

**Leo:** YONGE STREET, ROBSON  
STREET, St. CATHERINE --

**Akash:** YEAH.

**Leo:** -- YORKVILLE.

SO, IT'S ALL OVER CANADA, I  
LOVE THAT.

**Akash:** ALL ACROSS CANADA.  
NOW ALL THE BA--

**Leo:** TUNNELS OF MOOSE JAW.

**Akash:** THE BANKING IS ALL  
DONE THROUGH THIS SYSTEM HERE.

[ Pop captions down ]

**Leo:** NO MORE PAPER MONEY?

**Akash:** NO MORE PAPER MONEY --

**Leo:** CREDIT CARDS?

**Akash:** -- SO ENVIRONMENTALLY  
FRIENDLY, RIGHT?

**Leo:** CREDIT CARDS?

YEAH, YEAH.

**Akash:** SO, BUT EVERYBODY  
GETS A DIFFERENT COLOURED CARD.

**Leo:** A VISA CARD.

**Akash:** YES.

**Leo:** AND I GUESS VISA MIGHT  
HAVE HAD SOMETHING TO DO WITH  
THIS, YEAH.

**Akash:** YES, START THE KIDS  
OUT YOUNG I GUESS, YEAH.  
SO THIS SIDE YOU PUT IT INTO IF  
YOU WANT TO DEBIT. (laughing)

**Leo:** YOU KNOW, THIS IS  
ACTUALLY-- THAT WAS ALWAYS THE  
PAIN WITH MONOPOLY WAS ALL THE  
MONEY STUFF, THE COUNTING, THE BANKING.  
I WANNA BE THE BANKER, I WANT--  
AND THEN THE KID WOULD BE THE  
BANKER AND HE'D MESS IT UP.  
THIS IS GOOD.

**Akash:** YEAH.

**Leo:** SO, YOU START WITH 15,000.

**Akash:** YEAH, AND THEN OF  
COURSE, YOU KNOW, IF YOU WANT  
TO JUST DEBIT, YOU GO LIKE THAT  
AND THEN IT'LL DEBIT FROM THERE.

**Leo:** (laughing)

**Akash:** THERE YOU GO, AND  
THEN YOU PUT IT ON THAT SIDE  
AND IT'LL ADD IT.

**Leo:** IT TAKES IT OFF THE CARD?

**Akash:** YEAH.

**Leo:** OH, THAT'S SO FUNNY.

**Akash:** NO CHEATING NOW  
ANYMORE, SO (laughing)

**Leo:** OH, THAT IS FUNNY.

**Akash:** SO, THAT'S ABOUT \$75  
FOR THE BANKING EDITION.

**Leo:** OKAY.

DO THEY STILL SELL THE MONOPOLY  
WITH PAPER MONEY?

**Akash:** OH, YEAH, YOU CAN  
GET-- AND THERE'S SO MANY  
VERSIONS OF MONOPOLY OUT RIGHT  
NOW, SO.

**Leo:** OH, THERE REALLY ARE,  
YEAH, THAT'S FUN.

**Akash:** YEAH.

**Leo:** WHAT ELSE?

**Akash:** OKAY, Guitar Hero III.

**Leo:** OH, YOU CAN'T GO WRONG  
WITH THIS.

**Akash:** NO. NO, THEY'RE--

**Leo:** I WON'T LET MY KID HAVE  
IT THOUGH.

**Akash:** NO?

**Leo:** NO, BECAUSE I WANT HIM  
TO PLAY A REAL GUITAR, NOT A  
FAKE GUITAR.

**Akash:** YEAH. (laughing)

**Leo:** THIS DOES NOT TEACH YOU  
HOW TO PLAY GUITAR.

**Akash:** NO, DEFINITELY NOT.  
IT'S A GAME, BUT I TELL YOU IT  
IS A FUN GAME.

**Leo:** OH.

**Akash:** AND FOR SOMEBODY LIKE  
ME WHO HAS-- I'M TONE DEAF, SO  
IT'S PERFECT.

**Leo:** PEOPLE LOVE THIS GAME.

**Akash:** YEAH, OH, IT'S

SELLING LIKE CRAZY.

[ Pop captions down ]

**Leo:** THERE'S ANOTHER ONE

CALLED Rock Band.

IT'S VERY SIMILAR --

**Akash:** YEAH.

**Leo:** -- WHERE YOU HAVE

MICROPHONE, GUITAR AND DRUMS.

**Akash:** YEAH.

**Leo:** SAME IDEA.

THESE ARE VERY HOT.

THIS IS PlayStation 3 AND XBOX?

**Akash:** IT'S PlayStation 3,

XBOX 360, AND THE GUITAR IS

DESIGNED BY Gibson, SO.

**Leo:** OH, WELL, THERE YOU GO.

**Akash:** YEAH.

**Leo:** THIS LOOKS JUST LIKE AN SG.

**Akash:** YEAH. (laughing)

**Leo:** ALL RIGHT, WHAT ELSE

YOU GOT?

**Akash:** GOING-- MUSIC.

NOW, THERE'S YOUR GUITAR, YOU

CAN SING.

IT'S "HIGH SCHOOL MUSICAL."

THIS IS THE--

**Leo:** ALL THE GIRLS-- EVER

SINCE "CANADIAN IDOL,"

ALL THE GIRLS WANT TO SING NOW.

**Akash:** YEAH.

**Leo:** YEAH.

**Akash:** YEAH, THIS IS FOR THE Wii.

IT COMES WITH A MICROPHONE.

SO, KARAOKE, A LOT OF FUN, I  
TELL YA.

**Leo:** IS IT?

**Akash:** YEAH.

**Leo:** SO, IT'S KARAOKE.

THAT'S GOOD.

**Akash:** YEAH, IT'S KARAOKE  
FOR THE Wii.

IT'S PLUG AND PLAY.

**Leo:** THAT'S GOOD.

IS IT ONLY MUSIC FROM  
"HIGH SCHOOL MUSICAL" OR  
IS IT OTHER STUFF TOO?

**Akash:** NO, ONLY MUSIC FROM  
"HIGH SCHOOL MUSICAL."

**Leo:** OKAY.

**Akash:** BUT, HEY, THERE'S  
ENOUGH OF IT, THERE'S I DON'T  
KNOW HOW MANY VERSIONS OUT.

**Leo:** THE KIDS LOVE THAT.

NO, YOU'RE RIGHT, THE KIDS LOVE THAT.  
AND IT COMES WITH A LITTLE  
"HIGH SCHOOL MUSICAL" MIC.

**Akash:** YEAH --

**Leo:** AW, ISN'T THAT CUTE.

**Akash:** -- IT HOOKS UP TO THE Wii.  
NOW, IF YOU WANT TO GET JUST A  
MIC TO HOOK UP YOUR PS3, THIS  
IS THE Logitech PS3 MIC.

**Leo:** AND IT'S USB.

**Akash:** YEAH, USB HOOKS UP  
DIRECTLY TO IT.

SO IF YOU ARE PLAYING, YOU

KNOW, CERTAIN GAMES AND STUFF.

**Leo:** Rock Band THIS WOULD  
WORK WITH PROBABLY, YEAH, YEAH.

**Akash:** IT WOULD BE WORKING  
PERFECTLY WITH THAT.

**Leo:** COOL, ALL RIGHT.

**Akash:** YEAH, SO IT'S ABOUT \$35.

[ Pop captions up ]

**Leo:** " KISS TODAY GOODBYE-- "  
I'M SORRY, I LOST MY HEAD.

[ Pop captions down ]

**Leo:** WHAT IS THIS?

**Akash:** THIS IS THE Hot Wheels Maniacs CAR.  
NOW, YOU KNOW, THIS IS STRICTLY  
FOR FUN.  
IT'S JUST--

**Leo:** IT'S BIGGER THAN THE  
OLD Hot Wheels.

**Akash:** YEAH, BUT...

(Hot Wheels sound effects)

**Leo:** (laughing) DID YOU HEAR THAT?

[ Pop captions up ]

**Akash:** THIS LITTLE-- THE  
WHOLE THING ABOUT IT, THERE'S  
BUILT-IN GAMES AND EVERYTHING.  
YOU'RE SUPPOSED TO SMASH IT UP  
AND EVERYTHING AND JUST HAVE FUN.  
THE MORE YOU--

**Leo:** THIS WOULD BE FUN FOR  
LITTLE KIDS.

[ Pop captions down ]

**Akash:** YEAH, THE MORE YOU  
SMASH IT UP, THE MORE POINTS

YOU GET.

THERE'S LITTLE GAMES BUILT INTO IT.

(sound effects, chimes twinkle,

Male: I love the twinklin'!)

**Leo:** "I LOVE THE TWINKLIN'?"

**Akash:** YEAH, WELL, THERE'S

THIS VERSION, THERE'S ANOTHER

VERSION TOO, BUT, YEAH.

BETTER HAVE INSURANCE ON THAT

CAR, I TELL YA.

**Leo:** WHAT'S THIS?

**Akash:** ONE OF MY FAVOURITE TOYS.

**Leo:** OHHH.

**Akash:** AND IT WORKS.

THIS IS THE Playskool Gloworm.

**Leo:** YEAH?

[ Pop captions up ]

**Akash:** IF YOU PUSH ITS

BELLY, IT'LL SING A LULLABY --

**Leo:** OH, SO CUTE.

**Akash:** -- AND THE FACE GLOWS

UP TOO.

**Leo:** " I AM A LITTLE GLOWORM "

**Akash:** (laughing)

**Leo:** THIS IS FOR THE REALLY

LITTLE KIDS.

**Akash:** THAT IS.

**Leo:** OH, BUT THEY'D LOVE THAT.

[ Pop captions down ]

**Akash:** IT'S REALLY COOL. \$10.

IT DOES A WHOLE BUNCH OF

DIFFERENT LULLABIES, AND THE

COVER IS MACHINE WA--

**Leo:** I WANT TO GO TO SLEEP.

**Akash:** (laughing)

WELL, I CAN STEP BACK HERE IF  
YOU LIKE.

THE COVER IS MACHINE WASHABLE,  
REALLY IMPORTANT, RIGHT.

**Leo:** WE'VE GOT TWO THINGS ON  
THE FLOOR.

THIS IS THE TRANS-- KIND OF  
LIKE, IT'S NOT A TRANSFORMER,  
BUT KIND OF LIKE A TRANSFORMER.

**Akash:** THAT IS THE Learning Curve --

**Leo:** IT LOOKS LIKE A TRUCK.

**Akash:** YEAH, THAT'S FROM THE SOURCE --

**Leo:** WATCH THIS.

**Akash:** -- AND CIRCUIT CITY.

SO, YOU PUSH A BUTTON.

IT'S A CAR, YOU CAN RUN IT LIKE  
A REMOTE CONTROL CAR.

**Leo:** OKAY.

**Akash:** YOU PUSH THE BUTTON.

[ Pop captions up ]

**Leo:** BUT WATCH THIS.

OH BOY, OH BOY --

**Akash:** (laughing)

**Leo:** -- SOMETHING'S GOIN'  
ON, SOMETHING'S HAPPENIN'.  
I DON'T KNOW IF I LIKE THIS.

[ Pop captions down ]

**Leo:** OH, IS THAT COOL.

**Akash:** IT IS VERY.

**Leo:** SO, IT'S BOTH A REMOTE  
CONTROL VEHICLE AND A ROBOT.

**Akash:** YEAH.

OKAY, WE'LL...

**Leo:** OH, LOOK AT THAT.

AND YOU CAN TURN HIM AROUND AND  
MAKE HIM DO STUFF?

**Akash:** WE'LL SPIN HIM AROUND  
HERE, OKAY, AND --

**Leo:** WOW.

**Akash:** -- HE'LL DANCE.

**Leo:** (deep voice) IT'S OPTIMUS PRIME.  
I WILL DANCE WITH YOU.

**Akash:** NOW, WHAT YOU CAN DO,  
IT'S REALLY COOL, IT'S GOT A  
JACK IN THE BACK FOR YOUR MP3.

**Leo:** OH.

**Akash:** AND IT'S GOT A STRAP  
YOU PUT ON.  
SO, YOU HOOK UP YOUR MP3  
PLAYER, IT'LL PLAY YOUR MUSIC  
AND DANCE ACCORDING TO THE MUSIC.

**Both:** (laughing)

**Leo:** THAT'S PRETTY GOOD.  
HOW MUCH IS THAT?

**Akash:** THAT'S \$130.

**Leo:** YOU KNOW, THAT'S NOT SO BAD.

**Akash:** YEAH, NOT SO BAD.

**Leo:** NOW, Tickle Me Elmo IS BACK.

**Akash:** YEAH, THIS--

**Leo:** BUT THIS IS Tickle Me  
Elmo EXTREME.

**Akash:** THIS IS TMX Elmo.  
THIS WAS THE SPECIAL EDITION FOR 2007.

[ Pop captions up ]

(Elmo laughing and talking)

**Leo:** (laughing) CAN YOU HEAR HIM?  
HE'S LAUGHING.

**Akash:** HOW CAN YOU NOT LAUGH  
WITH THAT THING?

**Leo:** THIS IS THE BEST PART.

**Both:** (laughing)

**Akash:** HE KNOCKS HIMSELF  
OVER, IT'S GREAT.

**Elmo:** AGAIN, AGAIN.

**Leo:** DOES HE GET UP?

**Akash:** YEAH, HE SHOULD.

**Both:** (laughing)

**Leo:** OH!

**Akash:** THERE HE GOES.

**Leo:** THAT IS VERY GOOD.

**Akash:** YEAH, IT'S VERY COOL. \$40.

**Leo:** IS THIS GONNA-- IS THIS  
GOING TO BE AS HOT AS THE  
ORIGINAL Tickle Me Elmo WAS?

**Akash:** OH, IT-- PUSH HIS --  
PUSH HIS BELLY, TRY THAT.

**Leo:** OKAY.

**Akash:** THERE YOU GO.

(Elmo laughing)

[ Pop captions up ]

**Leo:** ALL RIGHT, AKASH SABLOK  
IS AT [andnowyouknow.net](http://andnowyouknow.net), A  
GREAT PLACE TO GO TO FIND OUT  
ABOUT ALL THIS STUFF.

**Akash:** YEAH.

**Leo:** WE'VE ALSO GOT LINKS AT [labwithleo.com](http://labwithleo.com).  
THIS-- I COULD SEE HOW FUNNY.

KEEP IT -- KEEP IT ON.

DON'T LOOK AT ME, LOOK AT ELMO.

**Both:** (laughing)

[ Pop captions down ]

**Leo:** WE'LL BE RIGHT BACK

WITH A FI-- I CAN'T HELP LAUGHING!

WE'LL BE BACK RIGHT AFTER THIS

WITH A FINAL WORD, STAY RIGHT HERE.

**Akash:** COOL.

(Theme music playing)

[ BLACK/COMMERCIAL ]

[ Pop captions down ]

**Leo and Kate:** (laughing)

**Leo:** THESE ARE SO MUCH FUN.

**Kate:** THIS IS MY FAVOURITE.

**Leo:** AKASH BRINGS SUCH GREAT STUFF.

GO AHEAD, GET -- HE IS SO CUTE.

(Elmo laughing)

**Kate:** I JUST THINK THIS IS SO GOOD.

**Leo:** ISN'T HE CUTE?

**Kate:** HONESTLY, I WANT ONE.

**Leo:** \$40 IS PRETTY

REASONABLE.

WHOA! WHOA WHOA WHOA!

WATCH OUT, WHOA!

**Both:** (laughing)

**Leo:** IT MAKES YOU LAUGH JUST

LOOKING AT IT.

**Kate:** OOOH.

[ Pop captions up ]

**Leo:** NOW, DO YOU THINK KIDS

HAVE AS MUCH AN IMAGINATION IF

THEY HAVE STUFF THAT DOES ALL

THIS STUFF FOR THEM OR?

**Kate:** I THINK IT HELPS.

IT'S VERY STIMULATING, YOU KNOW.

**Leo:** IT'S STIMULATING.

**Kate:** IT REALLY IS, YES.

**Leo:** I DON'T KNOW, WE --

WE'D GET THE BOX.

WE'D BE HAPPY WITH THE BOX.

**Kate:** I THINK IT'S MORE AN

ADULT THING. (laughing)

**Leo:** YEAH.

I JUST-- THIS IS THE ONE THAT SCARES ME.

OH, BOY.

ANYWAY, WE'RE GLAD YOU CAME TO

JOIN US TODAY.

HOPE WE DIDN'T SPEND A LOT OF YOUR MONEY.

IF YOU'D LIKE TO BE ON THE

SHOW, WE'D LOVE TO GET YOU ON THE SHOW.

ALL YOU HAVE TO DO - WHOA - IS

GO TO THE WEBSITE,

[labwithleo.com/techquestions](http://labwithleo.com/techquestions),

FILL OUT THE FORM AND THEN

WE'LL GET YOU ON THE SHOW.

AS OPTIMUS PRIME SAYS, WE'LL

SEE YOU NEXT TIME.

DON'T GO AWAY, GOODBYE.

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[ Pop captions down ]