

UNIT 4

Interaction Devices

1

Keyboards and Keypads

Pointing Devices

Printers

Displays-Small and Large

Speech and Auditory Interfaces

Collaboration

2

Goals of Collaboration

Asynchronous Distributed Interfaces

Synchronous Distributed Interfaces

Face-to-Face Interfaces

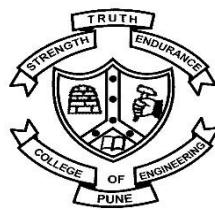
Balancing Function and Fashion

3

Error Messages

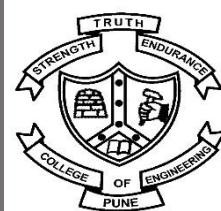
Display Design

Window Design



Interaction Devices

Human Computer Interaction



Interaction Elements



Text entry



Pointing



Display



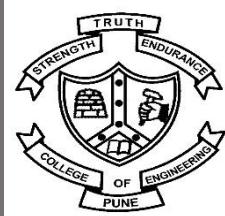
Paper



Physical



Virtual Reality

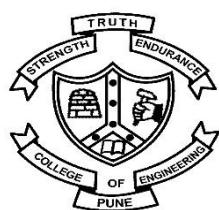


Input Devices



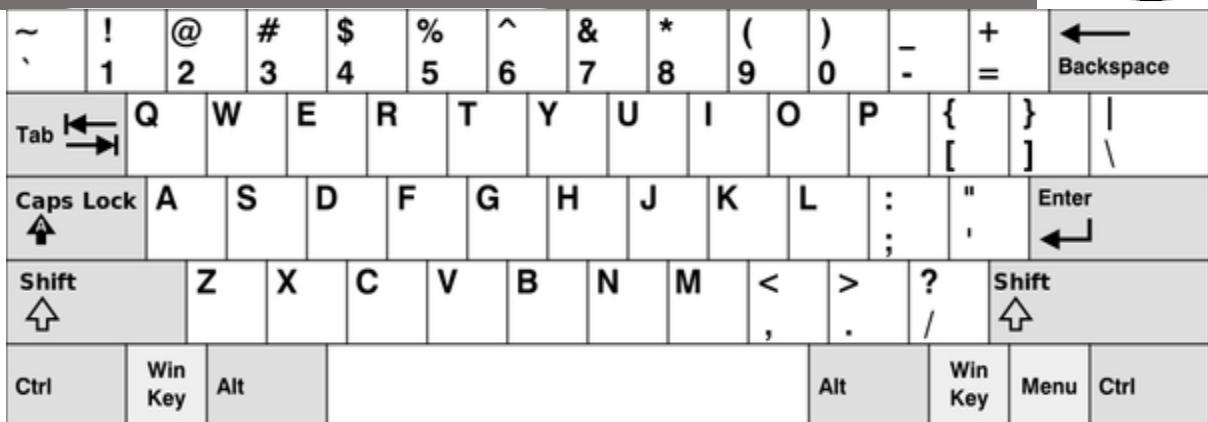
Text Entry

Pointing



Text Entry

Traditional Keyboard

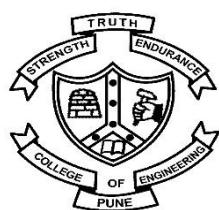


Phone Keyboard

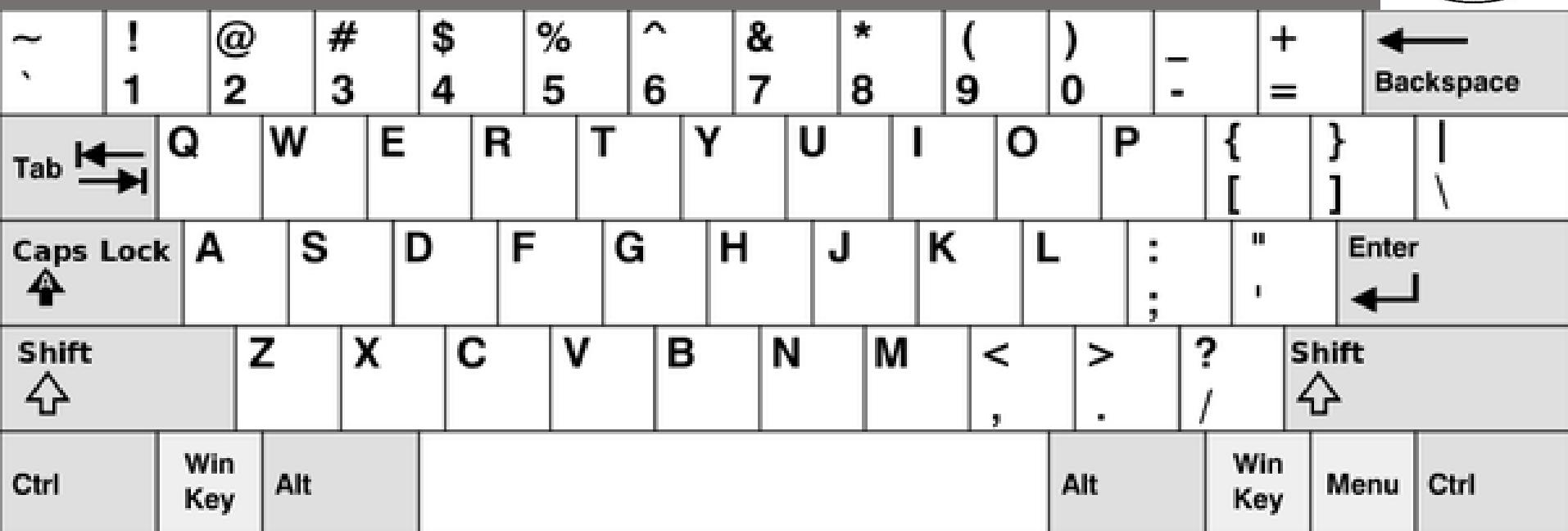


Smart Phone Keyboard





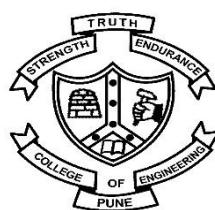
Traditional Keyboard



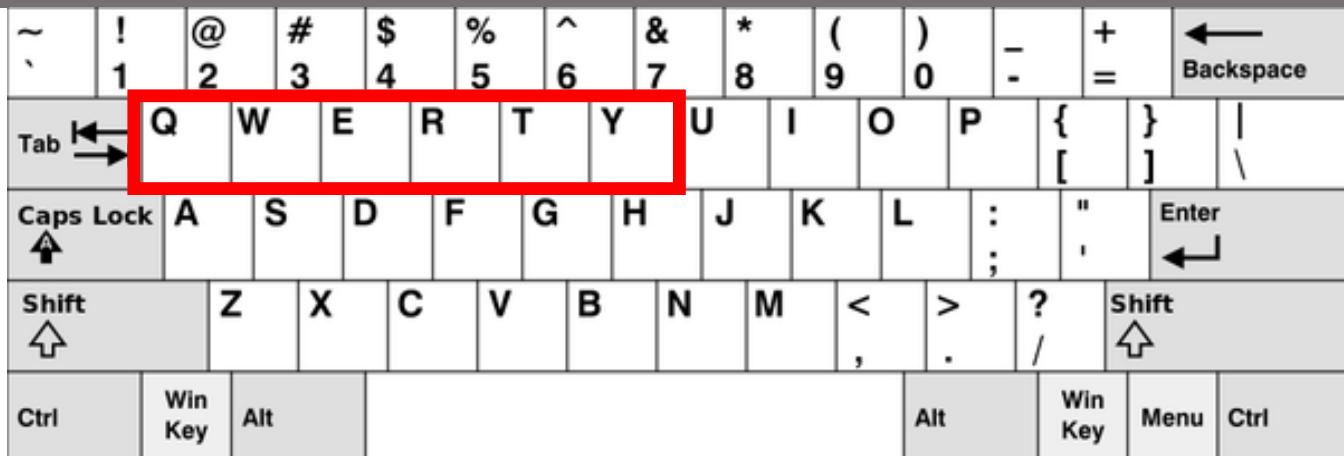
Allows rapid entry of text by experienced user

Key press closes connection, causing a character code to be sent

Usually connected by cable, but can be wireless



QWERTY Keyboard



Standardised layout

Non-alphanumeric keys

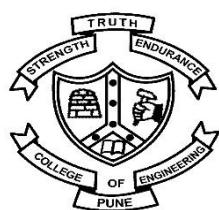
Accented symbols needed for different scripts

Differences between UK and USA keyboards

QWERTY arrangement not optimal for typing

Alternative designs allow faster typing

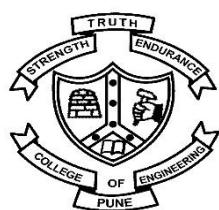
Large social base of QWERTY typists produces reluctance to change.



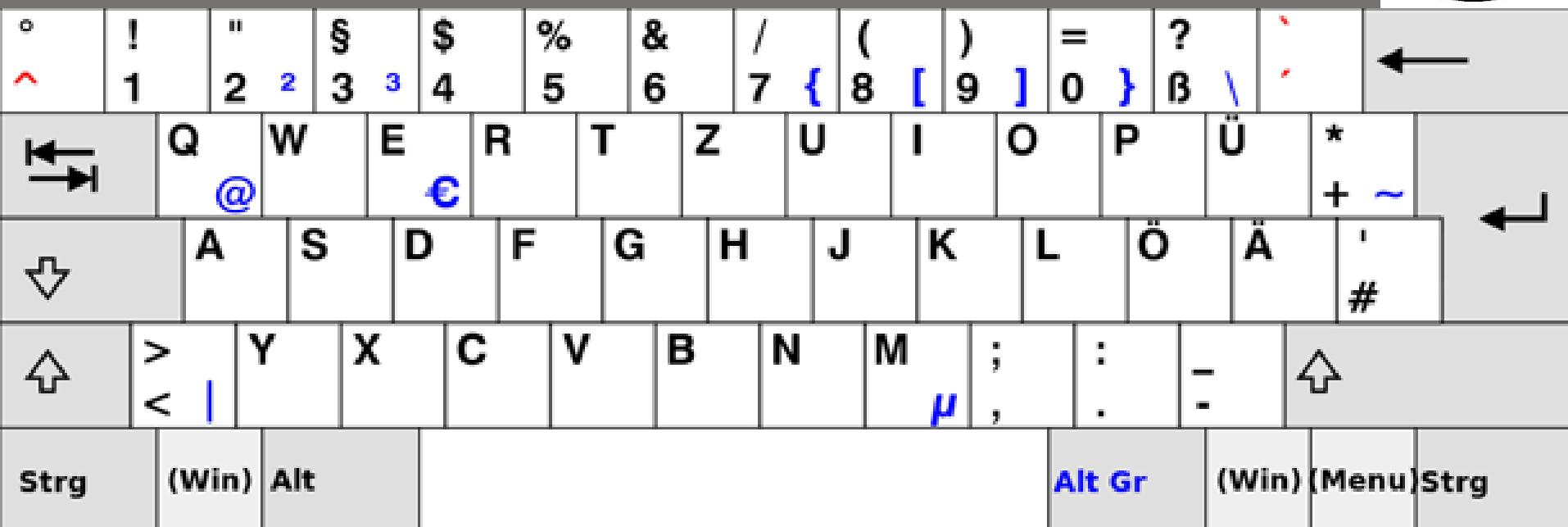
AZERTY



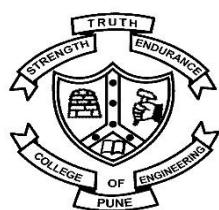
used in French-speaking countries across Europe and Africa



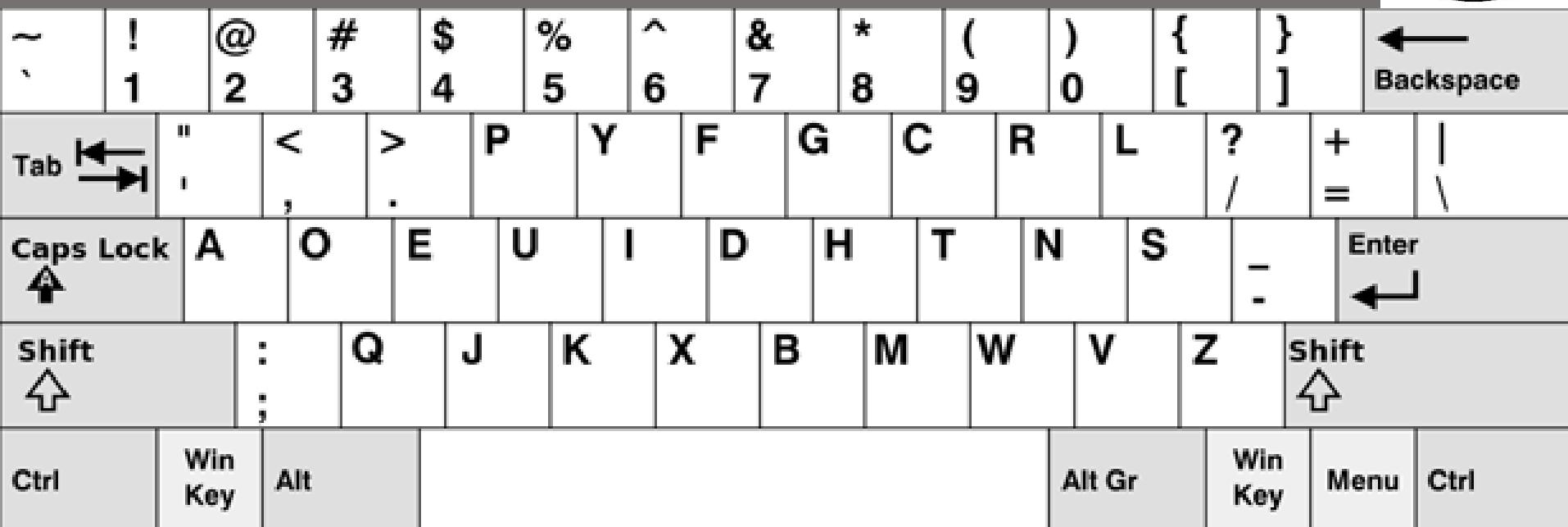
QWERTZ



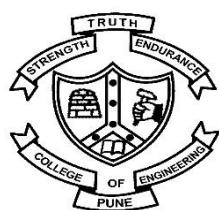
Used predominately in central Europe
Germany, Austria, the Czech Republic, and other nearby nations



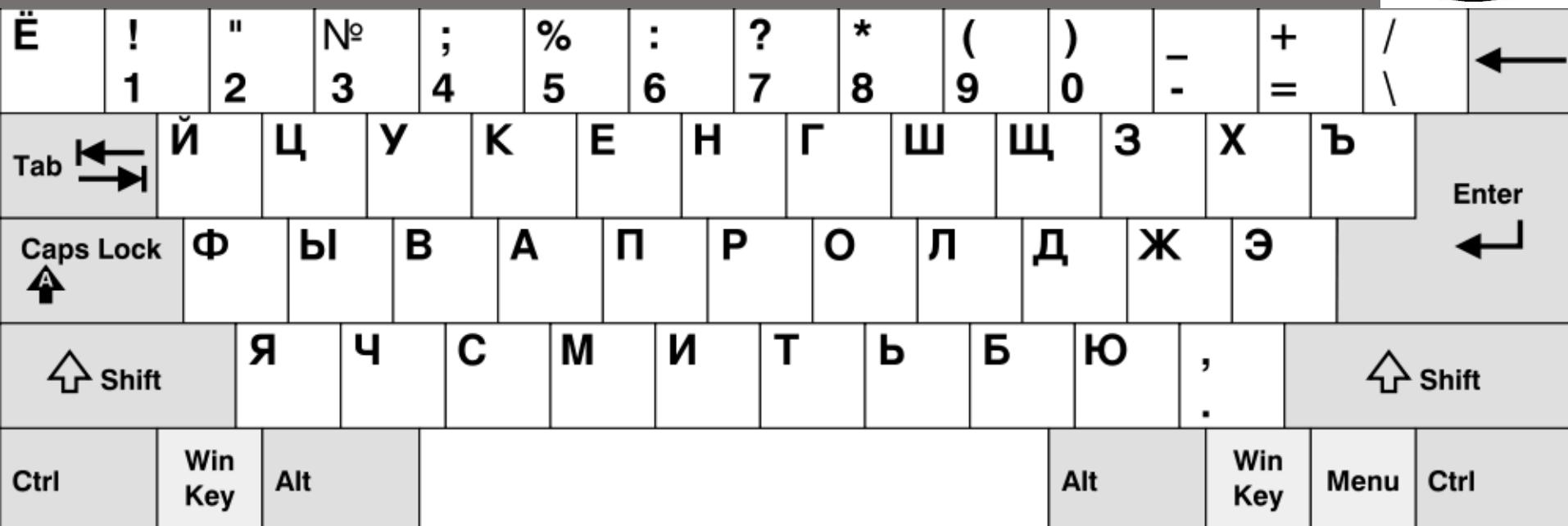
DVORAK



- Keyboard layout's inventor, August Dvorak.
- People using QWERTY keyboards only make 32 percent of strokes on the “home row” (where your fingers naturally rest on a keyboard).
- For Dvorak, that rises to 70 percent.
- And likewise, most people are right handed: Dvorak accounts for that, making more than half the strokes right handed.

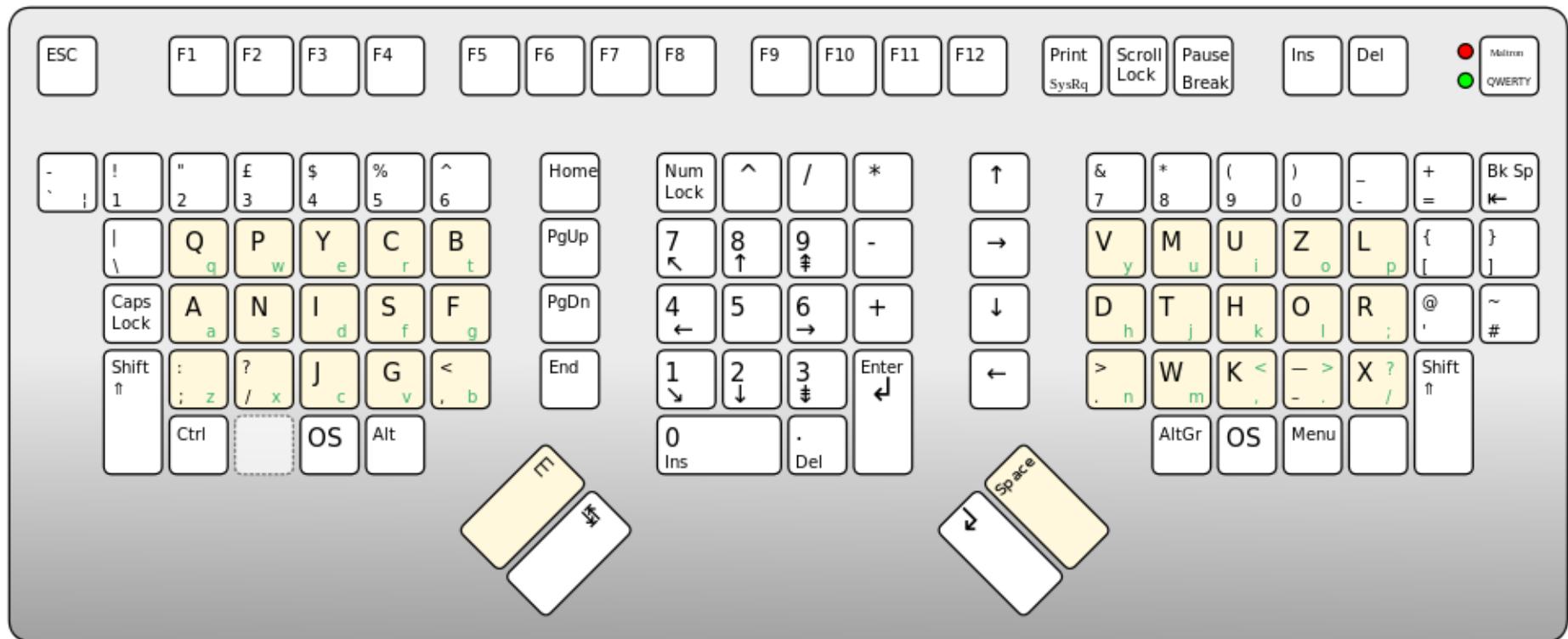
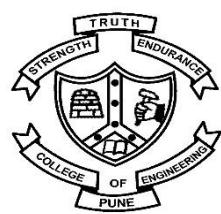


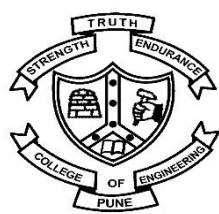
JCUKEN



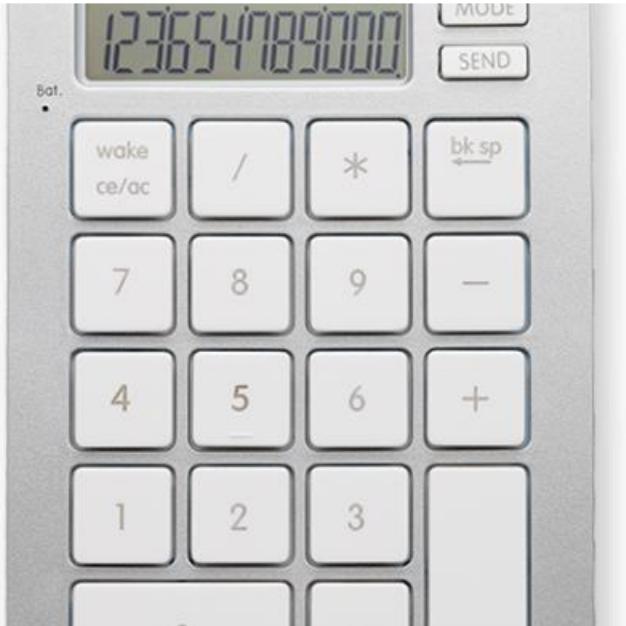
JCUKEN has been the default layout for Russian keyboards

Maltron





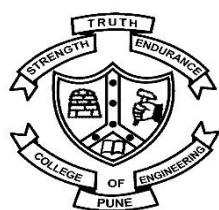
Numeric Keypad



Calculator

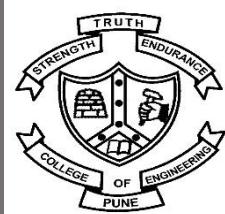
Telephone

Find a reason of this different layout for Numeric Keypad



Pointing Devices



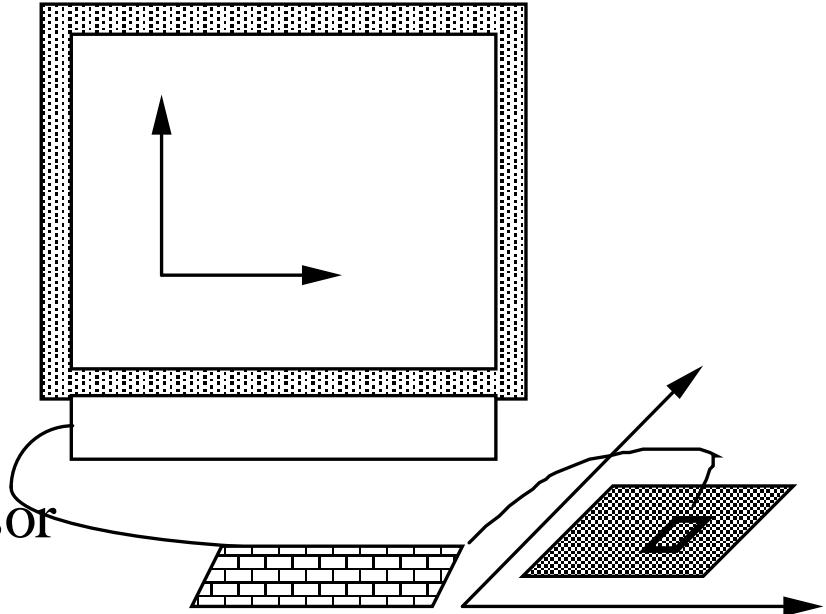


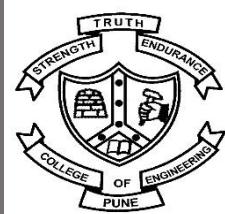
Pointing Devices

Mouse located on desktop

- Requires physical space
- No arm weakness

- Relative movement only is detectable.
- Movement of mouse moves screen cursor
 - Screen cursor oriented in (x, y) plane,
 - Mouse movement in (x, y) plane ...
- Device itself doesn't obscure screen, is accurate and fast.
- Hand-eye coordination problems for novice users

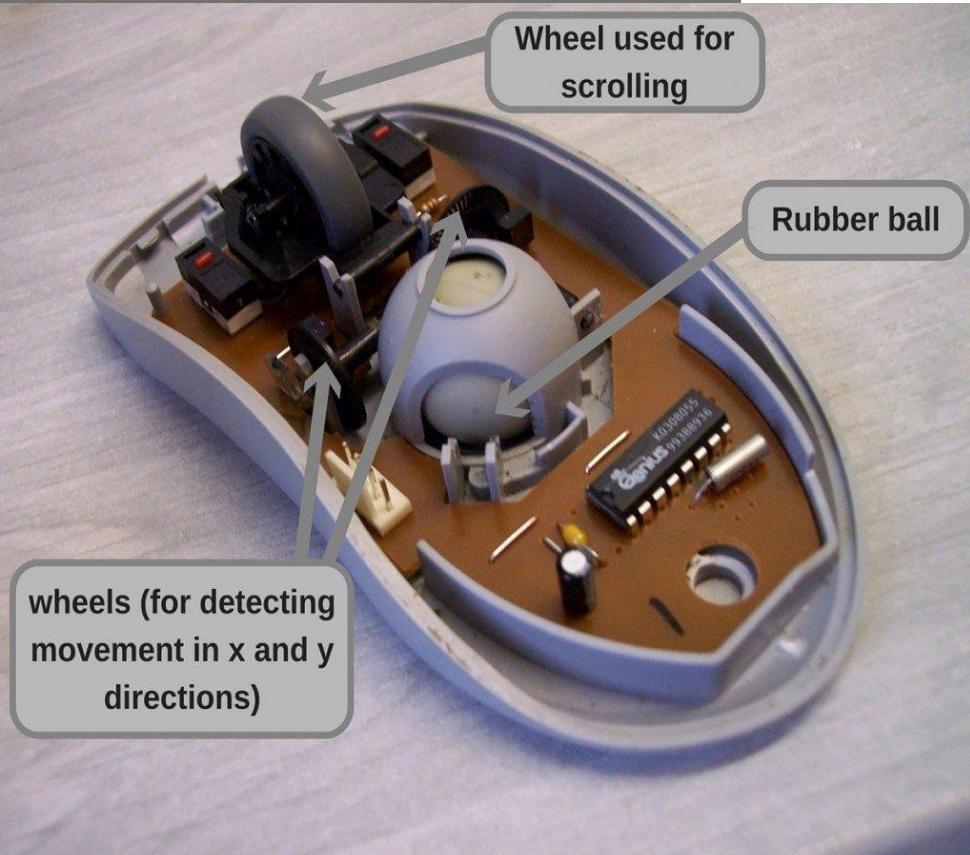


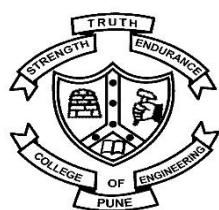


Mouse Motion Detection

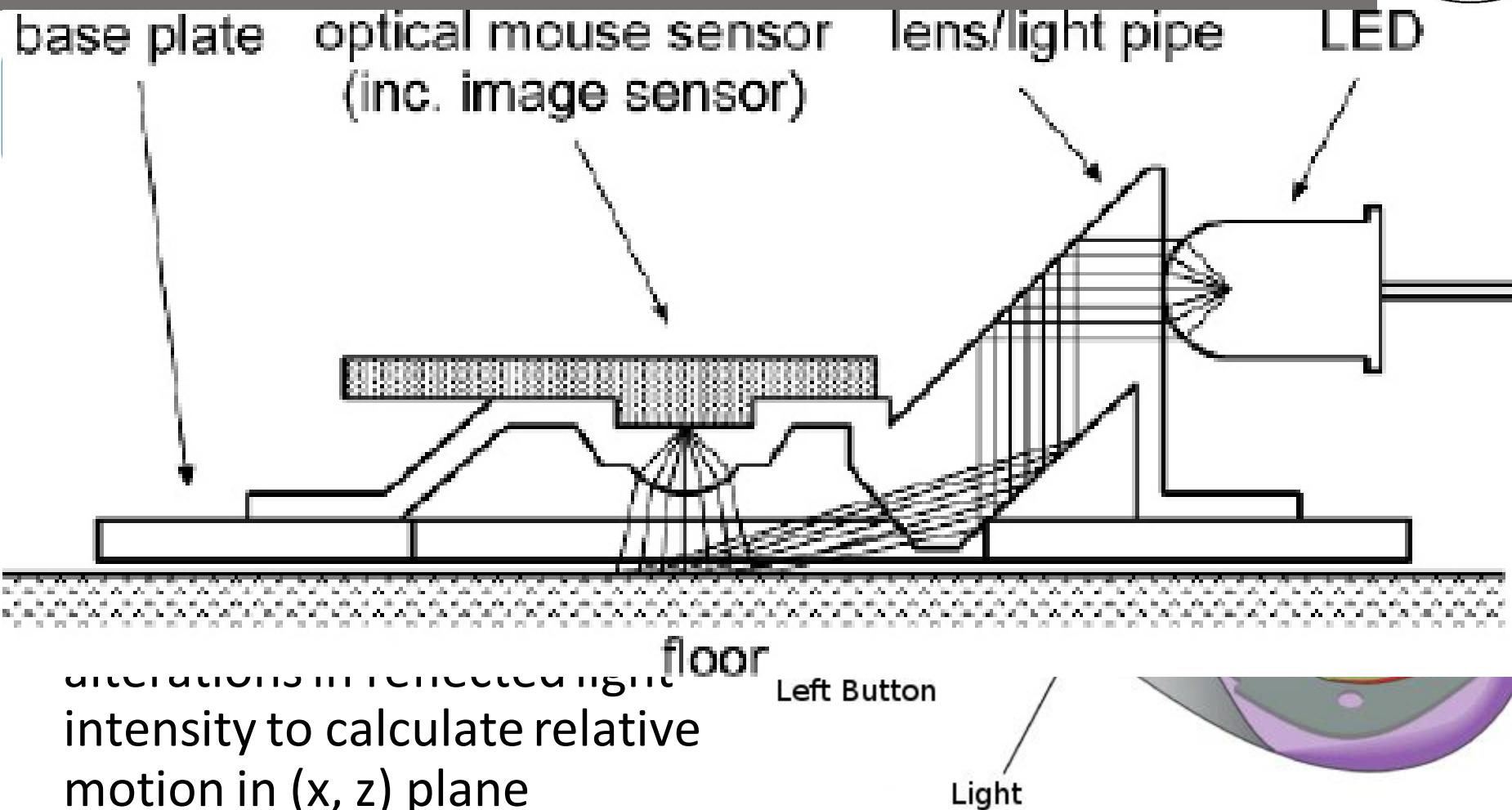
Mechanical

- Ball on underside of mouse turns as mouse is moved
- Rotates orthogonal potentiometers
- Can be used on almost any flat surface





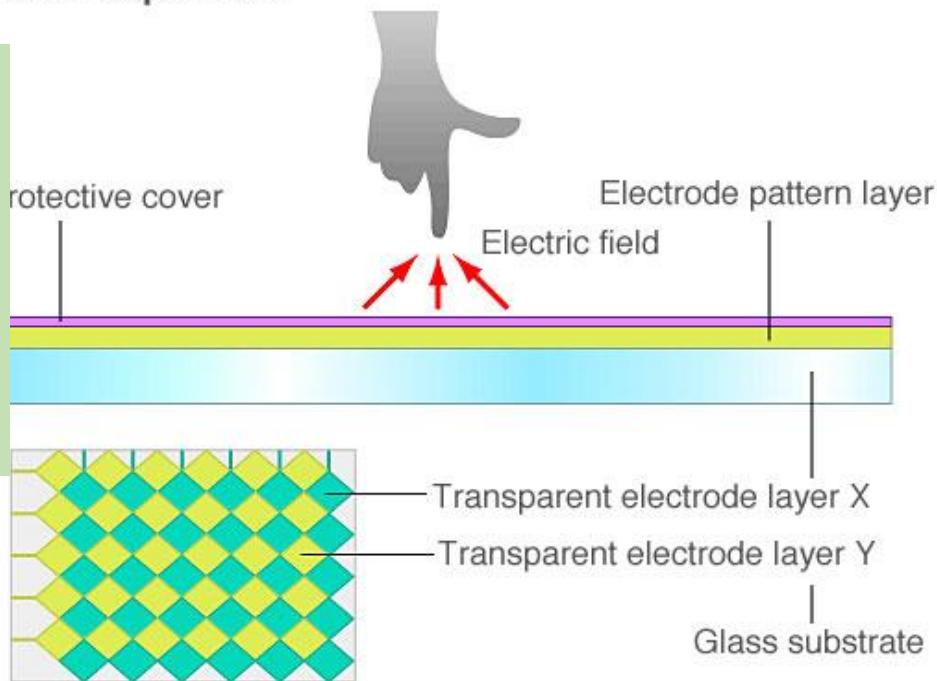
Mouse Motion Detection



Touch Screen

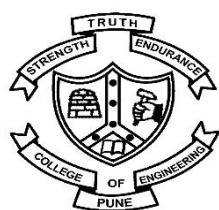
Find Pros
and Cons of
Using Touch
Screen

Projected Capacitive



Touch Sense

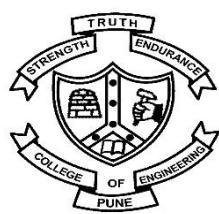
- Detect the presence of finger or stylus on the screen.
- Works by interrupting matrix of light beams, capacitance changes or ultrasonic reflections
- *direct* pointing device



Discrete positioning controls

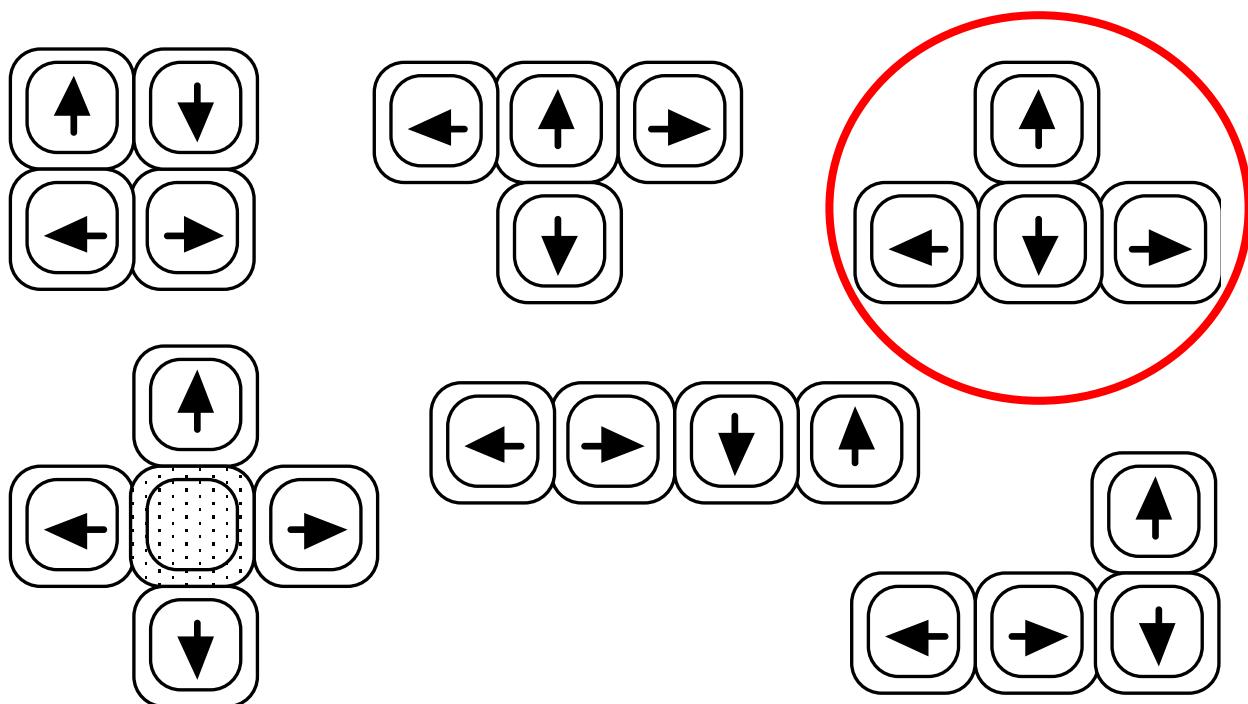
- Phones, TV controls etc.
 - Cursor pads or mini-joysticks
 - Discrete left-right, up-down
 - Mainly for menu selection

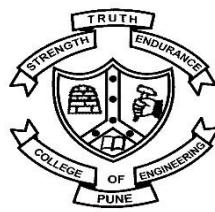




Cursor keys

- Four keys (up, down, left, right) on keyboard.
- Very, very cheap, but slow.
- Useful for not much more than basic motion for text-editing tasks.
- No standardised layout, but inverted “T”, most common



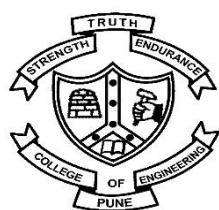


Display



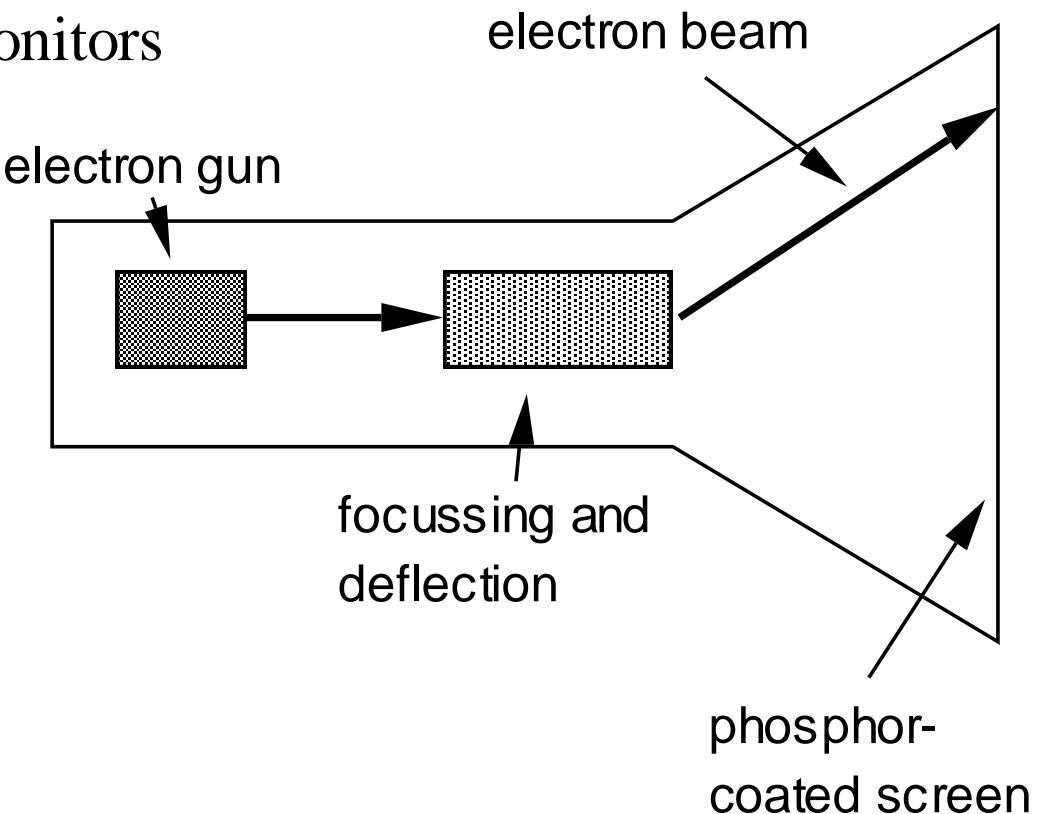
Display Devices

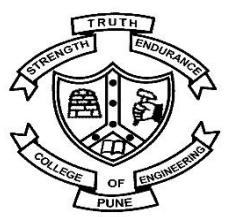
- Bitmap screens (CRT & LED) large & situated displays
digital paper



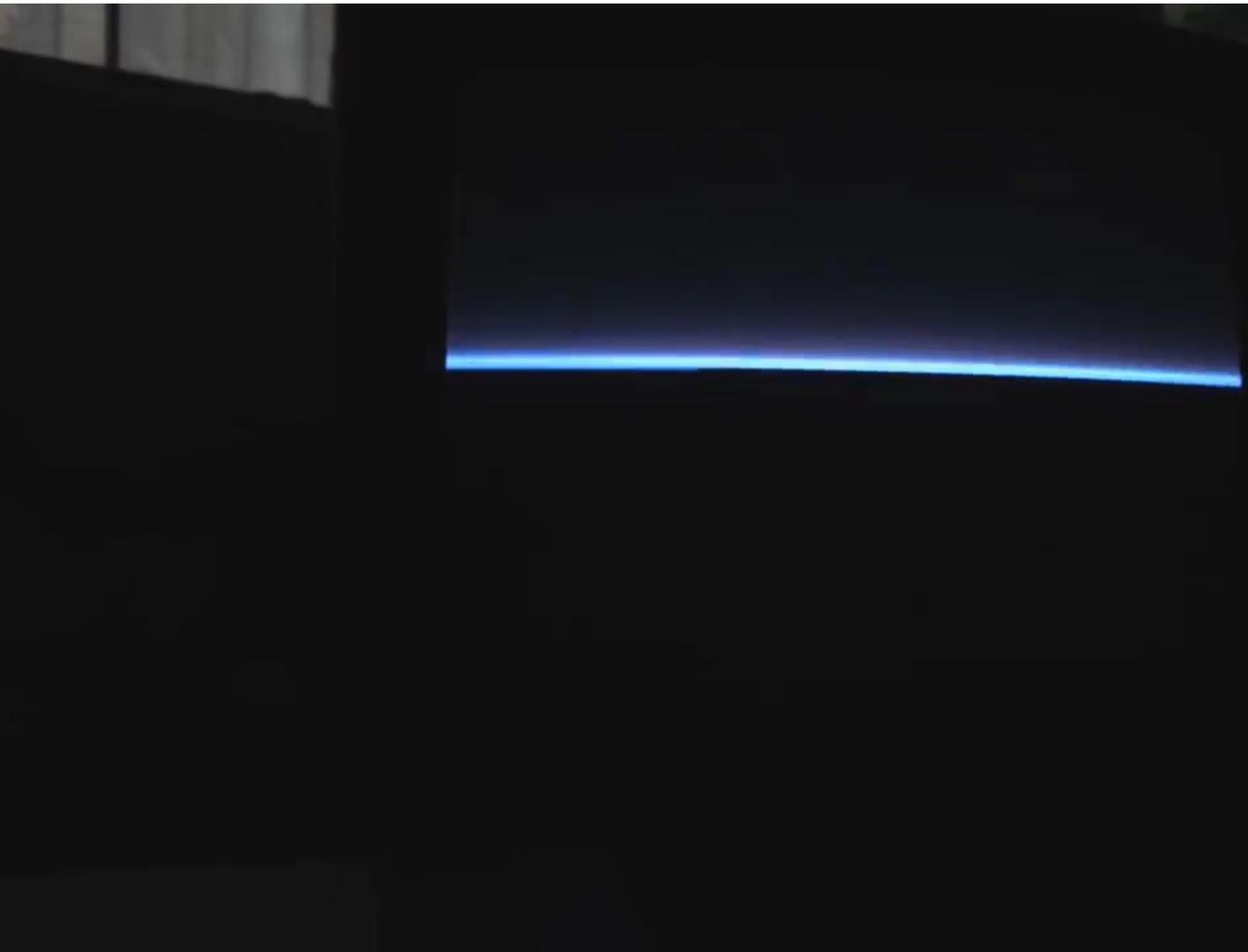
CRT

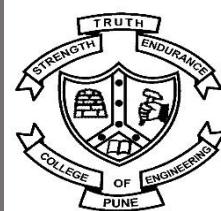
- Stream of electrons emitted from electron gun, focused and directed by magnetic fields, hit phosphor-coated screen which glows
- Used in TVs and computer monitors





CRT





Health hazards of CRT !

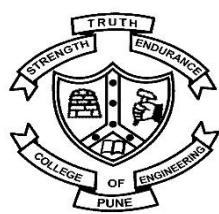
X-rays: largely absorbed by screen (but not at rear!)

UV- and IR-radiation from phosphors: insignificant levels

Radio frequency emissions, plus ultrasound ($\sim 16\text{kHz}$)

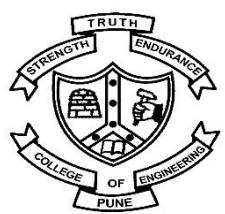
Electrostatic field - leaks out through tube to user. Intensity dependant on distance and humidity. Can cause rashes.

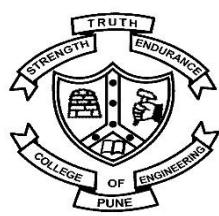
Electromagnetic fields (50Hz-0.5MHz). Create induction currents in conductive materials, including the human body.



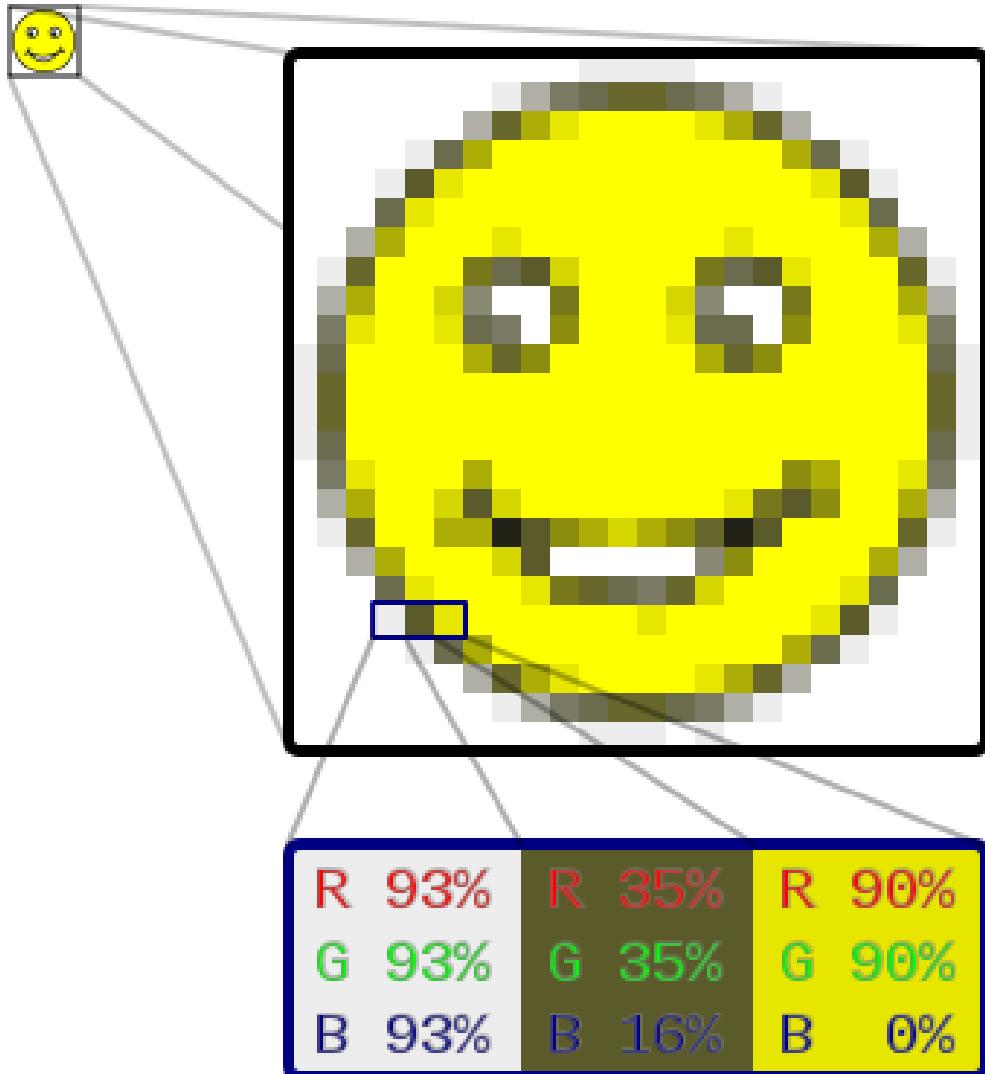
LCD displays

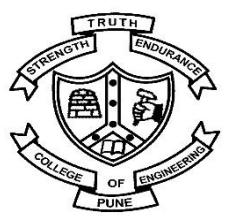
- Smaller, lighter, and ... no radiation problems.
- Found on PDAs, portables and notebooks,
... and increasingly on desktop and even for home TV
- Also used in dedicated displays:
digital watches, mobile phones, HiFi controls
- How it works ...
 - Top plate transparent and polarised, bottom plate reflecting.
 - Light passes through top plate and crystal, and reflects back to eye.
 - Voltage applied to crystal changes polarisation and hence colour
 - Light reflected not emitted => less eye strain



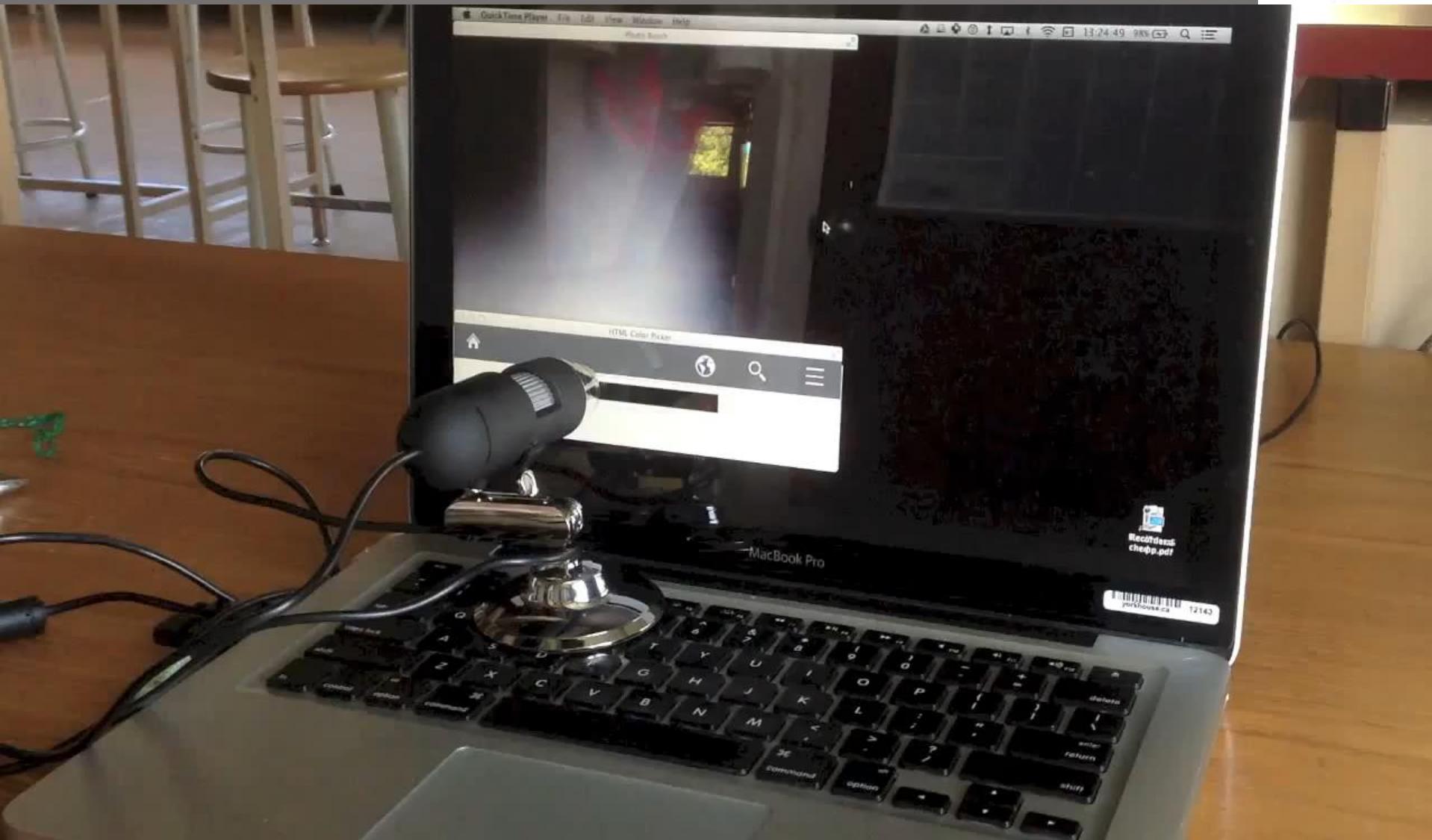


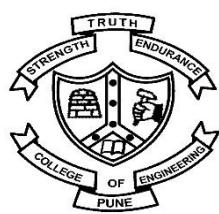
LED Bitmap Display





LED Bitmap Display

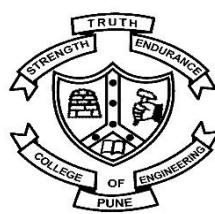




Resolution

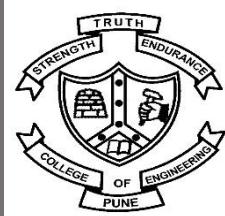
- **Resolution:** Number of pixels on screen (width x height)
- **Density:** pixels or dots per inch - dpi

	SD	HD	4K
Resolution	480i from 640 x 480 pixel to 852 x 480 pixel 576i from 480 x 576 pixel to 768 x 576 pixel	720p from 1280 x 720 pixel to 1366 x 768 pixel 1080p / 1080i 1920 x 1080 pixel	2160p DCI: 4096 x 2160 pixel UHD-1: 3840 x 2160 pixel
Quality	low quality	high quality	very high quality
Use	formerly used standard for movies, television and other hardware	new and wide spread standard for movies, television and hardware	very high quality standard with different versions for cinema and home screening



Colour Depth

- Aspect ratio
 - Ratio between width and height
 - 4:3 for most screens, 16:9 for wide-screen TV
- Colour depth:
 - How many different colours for each pixel?
 - Black/white or greys only
 - 256 from a palette (0-255)
 - 8 bits each for red/green/blue = millions of colours



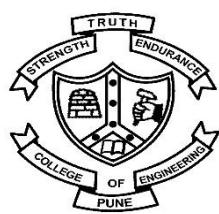
Paper



Printer



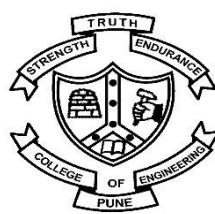
Scanner



Printing

- Image made from small dots
 - Allows any character set or graphic to be printed,
- Critical features:
 - resolution
 - size and spacing of the dots
 - measured in dots per inch (dpi)
 - speed
 - usually measured in pages per minute
 - cost!!

dots



Types of dot-based printers

■ Dot-matrix printers

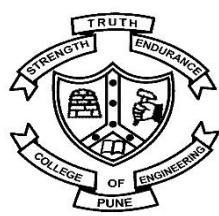
- Use inked ribbon (like a typewriter)
- Line of pins that can strike the ribbon, dotting the paper.
- Typical resolution 80-120 dpi

■ Ink-jet and bubble-jet printers

- Tiny blobs of ink sent from print head to paper
- Typically 300 dpi or better .

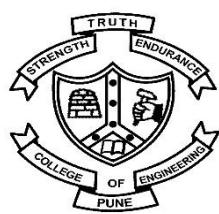
■ Laser printer

- Like photocopier: dots of electrostatic charge deposited on drum, which picks up toner (black powder form of ink) rolled onto paper which is then fixed with heat
- Typically 600 dpi or better.

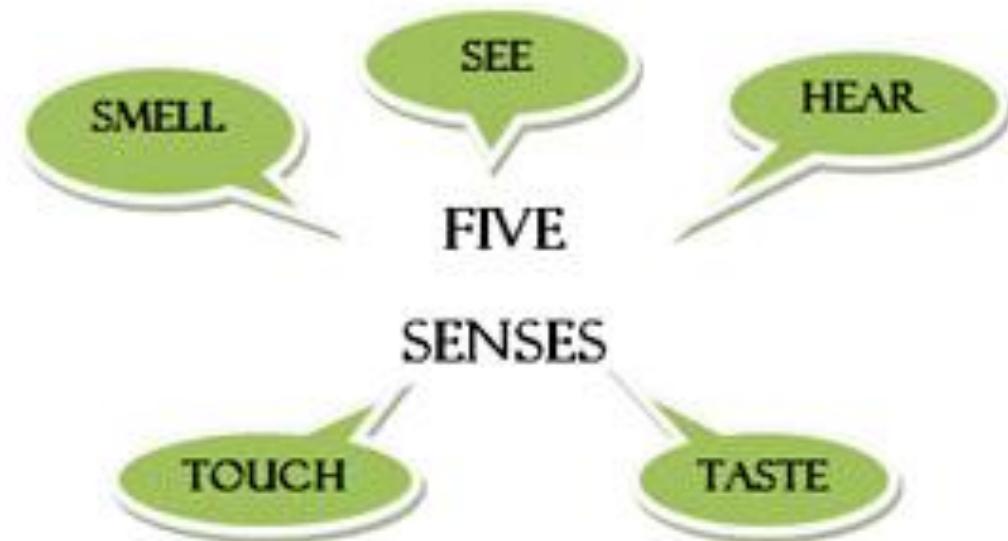


Scanners

- Take paper and convert it into a bitmap
- Two sorts of scanner
 - flat-bed: paper placed on a glass plate, whole page converted into bitmap
 - hand-held: scanner passed over paper, digitising strip typically 3-4" wide
- Shines light at paper and note intensity of reflection
 - colour or greyscale
- Typical resolutions from 600–2400 dpi

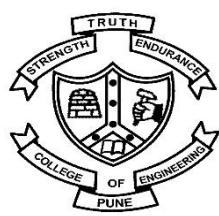


Physical



Physical

- Audio, touch, feel, smell
- Physical controls environmental and bio-sensing

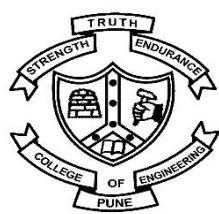


Audio Output Interface



Audio

- Beeps/bongs/clonks/whistles
- Used for error indications
- Confirmation of actions e.g. keyclick

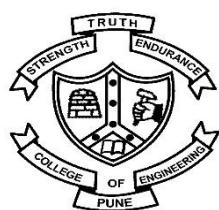


Audio Input Interface



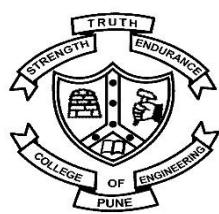
Speech Recognition

- Identify words, sentence



Touch, feel, smell

- touch and feeling important
 - in games ... vibration, force feedback
 - in simulation ... feel of surgical instruments
 - called *haptic* devices
- texture, smell, taste
 - current technology very limited



Interaction Elements



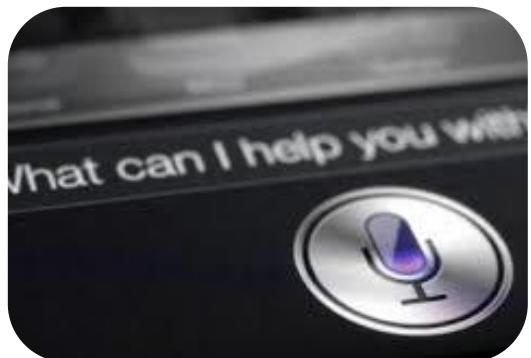
Text Entry



Display



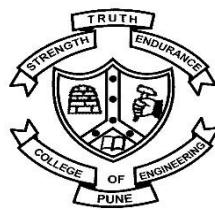
Paper



Physical

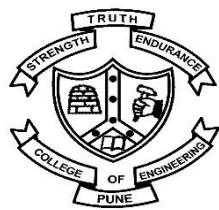


Virtual Reality



Balancing Function and Fashion

Human Computer Interaction



Content

Introduction

Error Messages

Display Design

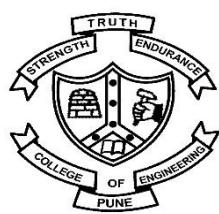
Window Design

1

2

3

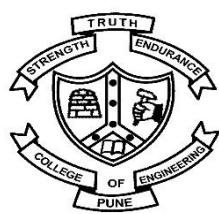
4



Balancing Function and Fashion



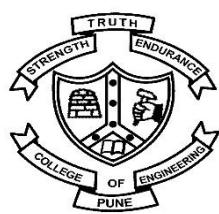
Early mobiles were purely Functional and color was black



Balancing Function and Fashion



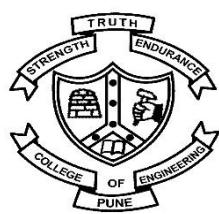
Modern designers have learned to balance function and fashion



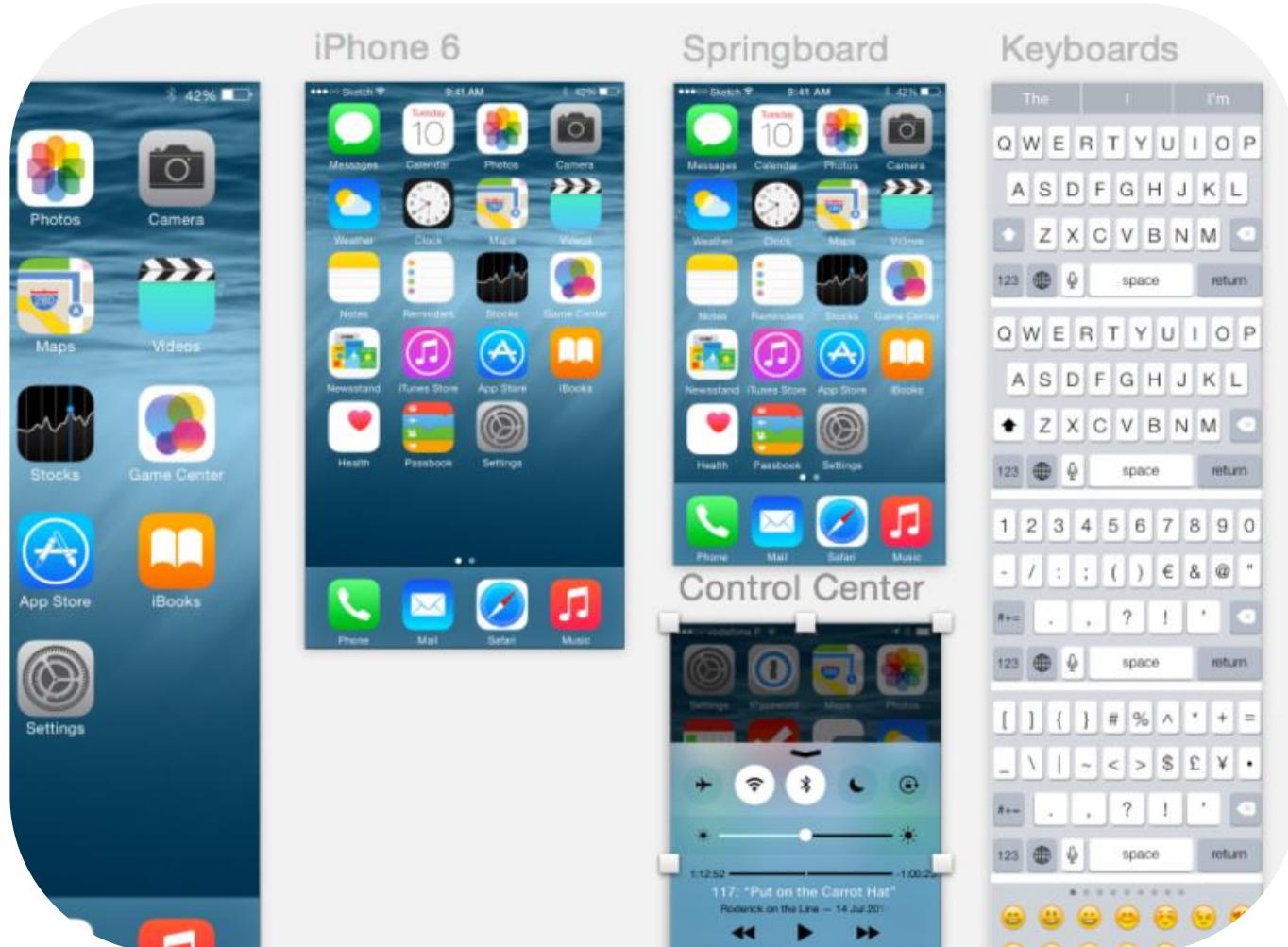
Balancing Function and Fashion



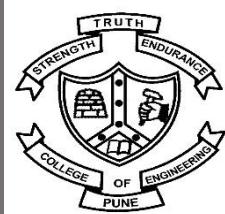
Design matters that are functional issues with many human-factors criteria but also styles to suit a variety of customers.



Balancing Function and Fashion

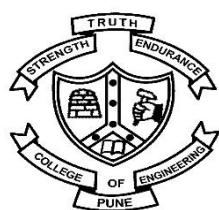


Interface design have to match the high art of architecture or trendiness of design.



Balancing Function and Fashion





Balancing Function and Fashion



College of Engineering, Pune

An Autonomous Institute of the Government of Maharashtra

SEARCH

Search...



HOME

ABOUT ▾

ADMISSIONS ▾

DEPARTMENTS ▾

ACADEMICS ▾

CLUBS ▾

RESOURCES ▾

PLACEMENT CELL

September

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

NAVIGATION

- + Home
- + COEP Mail
- + COEP Moodle
- + Virtual Lab

ments/computerit

CAMPUS

Applied Sciences

BHAU

Civil

Computer & IT

Electrical

Electronics And
Telecommunication

Instrumentation and Control

Mathematics

Mechanical

Metallurgy

Physics

Production Engineering And
Industrial Management

ES

TENDERS

RECRUITMENT

NIRF RANKING

FY M

COEP

Affor

CO

public-ad

new 3D

Repo

Vision & Mission

PEO's & PO's

Curriculum

Time Table

Course Plans

Faculty

B.Tech Project Abstract

M.Tech Dissertations

Research & Publications

to Level Counselling Round

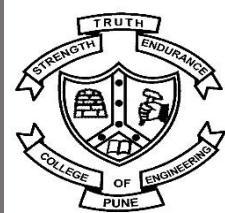
cial Body Parts

Lab is Concept to creation (C2C) is a
rise and education in these powerful

and Confirmation of

Balancing Function and Fashion

The screenshot shows the homepage of SIPhawaii.com. At the top, there's a navigation bar with links like 'Asia Tour', 'Google Bookmarks', 'Google Bookmark', 'Fasleit', 'View', and 'Account'. A banner on the left promotes 'TODAY'S SPECIAL Royal Kona from \$5.29' and features a 'TEA PERFORMANCE AWARD' logo. The main header 'Shop in Paradise' is displayed above the slogan 'presenting The Isle's Best'. Below this, a welcome message reads 'E komo mai and Aloha ahiahi - Welcome and Good evening. It's Best if it's FRESH from Hawaii'. The central content area features a large product listing for '100% ROYAL KONA Coffee medium roast, LION Coffee 100% Kona light medium roast Beans / Ground 9 Pack \$98.99 ~4 Pound'. To the left, there's a sidebar with links to various categories: 'Coffee Decaf Organic', 'Tea Decaf Organic', 'Macadamia nuts', 'Island Foods', 'Bath and Body', 'Aloha Health +', 'A little Aloha', 'Island Music-Video', 'Buy the Case', and payment method logos for 'Authorize.net', 'MasterCard', 'Visa', 'Discover', 'American Express', and 'PayPal'. To the right, there are sections for 'Hula Girl Cosmetic Bags - Cell Phone Pouches - Totes', 'Hawaii Exclusive Design Travel Accessories Luggage Straps', '5 Islands Coffees', and 'The Year 2012 Hawaiian calendars available NOW!'. The overall design is clean and informative, combining practical product details with a tropical aesthetic.



Balancing Function and Fashion

Software Acceptance

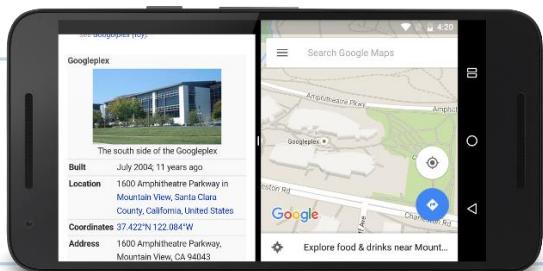
Design needs to be **understandable, predictable, and controllable**

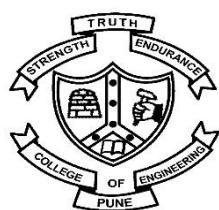
Conversational messages: prompts, explanations, error diagnostics, and warnings

Information layout is important

Multi-window coordination

Large, fast, high-resolution color displays have potential



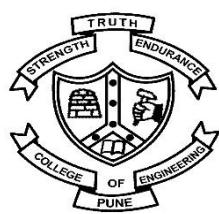


Balancing Function and Fashion

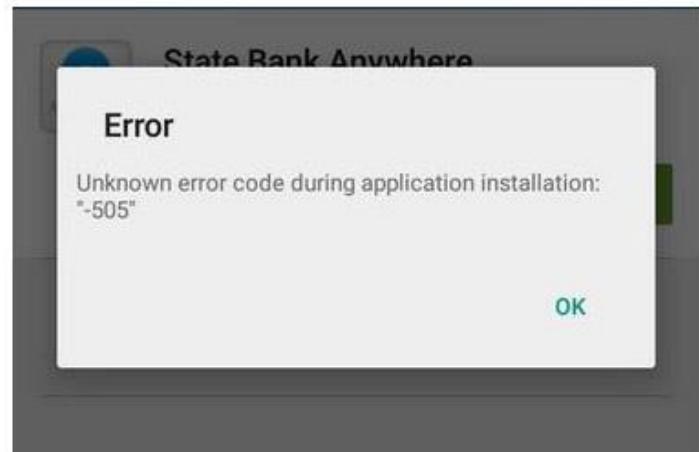
Design
Issues Error Messages

Display Design

Window Design

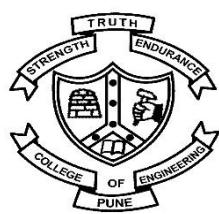


Why errors occurs ?



Lack of
knowledge

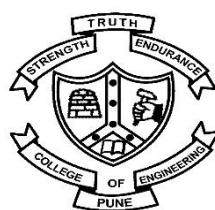
Incorrect
understanding



What is the consequence ?



Confused, are nervous or feel inadequate



What is the solution ?

The screenshot shows a user interface for creating an Apple ID. At the top, a date field contains "07/09/1987". Below it, a yellow input field contains the email address "name@example.com", which is highlighted with a blue border. A tooltip above the input field says "Enter a valid email address to use as your Apple ID." To the right of the input field is a small blue circular icon with a question mark. Below the input field, a message states "This will be your new Apple ID." In the bottom right corner of the screen, there is a large red callout box containing a circular 'no' symbol and the text "Sorry, that password isn't right. We can help you recover your password." A green checkmark icon is positioned to the left of the word "Do" in the callout box.

07/09/1987

Enter a valid email address to use as your Apple ID.

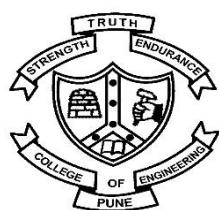
name@example.com

This will be your new Apple ID.

Sorry, that password isn't right. We can help you recover your password.

✓ Do

Make error messages as user-friendly as possible;
this is especially important for novice users



Error Messages

Improving

Measure where errors occur frequently, focus on these issues.

Revise error handling procedures

Improve documentation and training manuals, change permissible actions, etc.

Method

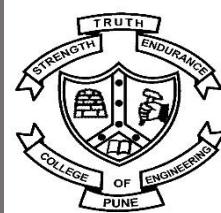
Specificity

Constructive guidance

Positive tone

User-centered style

Appropriate physical format

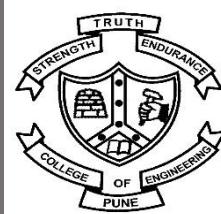


Specificity

Avoid being too general.

This makes it difficult to understand what went wrong and how it can be fixed.

Poor:	Better:
SYNTAX ERROR	Unmatched left parenthesis
ILLEGAL ENTRY	Type first letter: <u>S</u> end, <u>R</u> ead, or <u>D</u> rop
INVALID DATA	Days range from 1 to 31
BAD FILE NAME	File names must begin with a letter



Constructive Guidance and Positive Tone

Avoid aggressive messages

e.g., FATAL ERROR, RUN ABORTED

Eliminate negative words

e.g., ERROR, ILLEGAL, BAD, CATASTROPHIC

Do not only focus about what went wrong, give guidance

Options for approaches:

Automatic error correction,
present possible alternatives,
avoid errors from occurring.



Upload and verification failed. Please try again.

Email address

v

! Incorrect format.

✗ Don't!

07/09/1987

Enter a valid email address to use as your Apple ID.

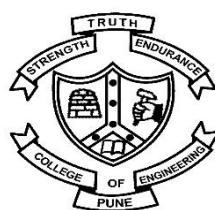
name@example.com

This will be your new Apple ID.



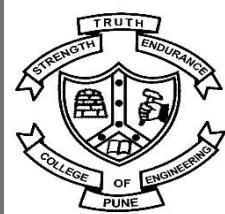
Sorry, that password isn't right. We can help you recover your password.

✓ Do



Constructive Guidance and Positive Tone

Poor	Better
Run-Time error '-2147469 (800405): Method 'Private Profile String' of object 'System' failed.	Virtual memory space consumed. Close some programs and retry.
Resource Conflict Bus: 00 Device: 03 Function: 01	Remove your compact flash card and restart
Network connection refused.	Your password was not recognized. Please retype.
Bad date.	Drop-off date must come after pickup date.

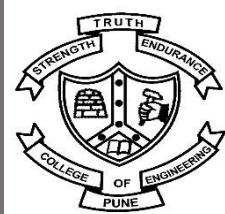


User Centered Phrasing

Telephone reply for wrong number dial

“Illegal telephone number. Call aborted. Error number 583-2R6.9. Consult your user manual for further information.”

“The number you have dial is incorrect, please check the number and call again”,



User Centered Phrasing

User initiates more than responds, provide more information if needed.

User should have control over amount of information system provides E.g., Screen Tips; HELP button for context-sensitive help or extensive online user manual.

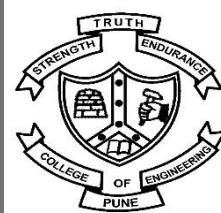
LAUNCH A CHANNEL **SIGN UP** ALL DONE

Sign Up With Livestream Already have an account? [Login in here.](#)

SIGN UP LOGIN RETRIEVE PASSWORD RETRIEVE USERNAME

First Name	Anders	✓	
Last Name	Toxboe	✓	
Username	uipatterns	✓ AVAILABLE ? ✓	
Email	info@ui-patterns.com	✓	
Confirm Email	inf0@ui-patterns.com	✗	
Password		?	
Confirm Password		REQUIRED	
Date of Birth	<input type="text"/>	<input type="text"/>	<input type="text"/>
Gender	<input type="radio"/> Male <input type="radio"/> Female		
Spam Protection		Enter image text	REQUIRED
Fine Print	<input type="checkbox"/> I agree with Livestream Terms & Privacy Policy.		REQUIRED

BACK **SIGN UP**

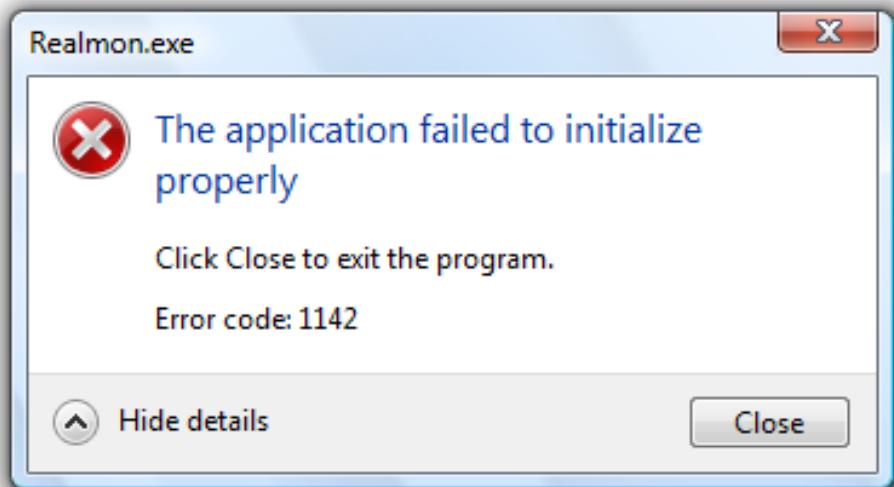


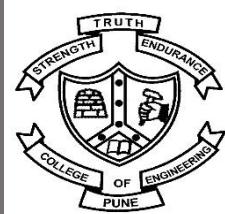
Appropriate physical format

Upper vs. lower case: *Use “all upper case” only in specific situations.*

Never use code numbers or, if must, place them at the end of the message or hide them

Audible notification (e.g. bell, buzzing noise, etc.) may be important, be always careful with using sound.



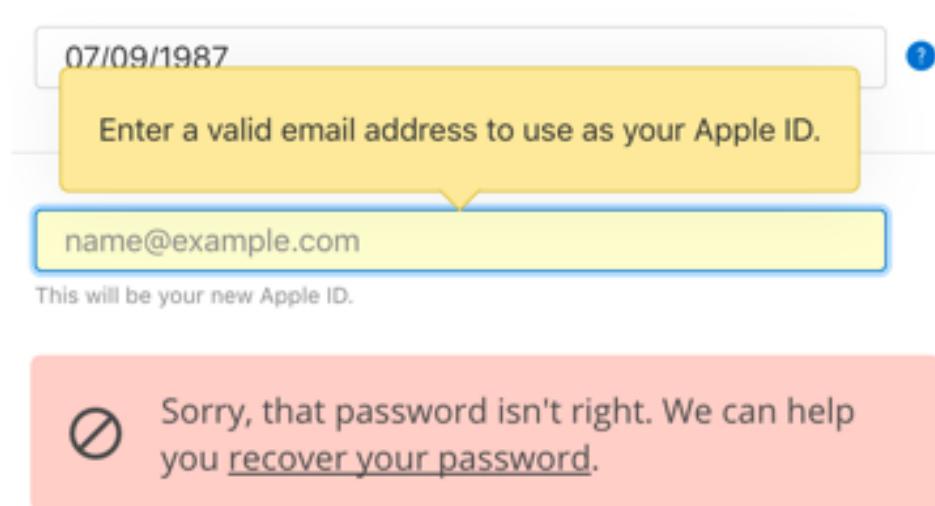


Consider best location of messages.

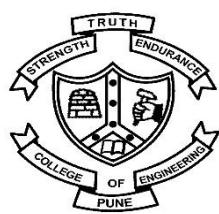
Near where problem arose

Placed in consistent position on bottom of screen

Near to, but not confusing relevant information



✓ Do



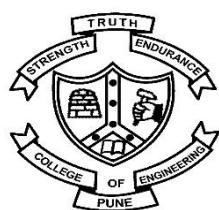
Development of effective messages

Should be evaluated by several people and tested with suitable participants.

Messages should appear in user manuals and be given high visibility or, contextual help.

Records should be kept on the frequency of occurrence of each error.

Improved messages will be of the greatest benefit to novice users, but regular users and experienced professionals will also benefit.



What is your opinion ?



Name



Please enter your name.



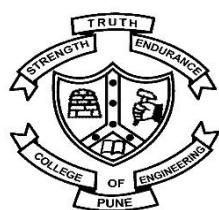
Name



You didn't enter a name.

User is informed in a humble way about the problem.

The error message seems to blame the user.



What is your opinion ?



Copy File

A file with the same name already exists.

- Replace existing file
- Keep both files

Cancel



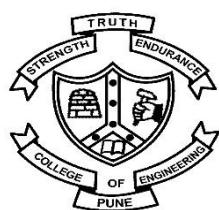
Copy File

A file with the same name already exists.

Cancel

Appropriate actions are given to resolve the problem.

The action does not guide the user about solving the problem.



What is your opinion ?



Cannot Rename

A file with the same name already exists.
Specify another name.

OK



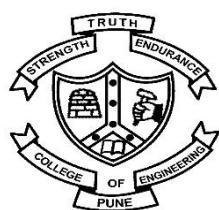
Cannot Rename

Specify another name.

OK

The message contains problem, cause of error and solution.

The cause of error is missing in the message.



What is your opinion ?



Login Failed

Your username and/or password do not match.

Retry



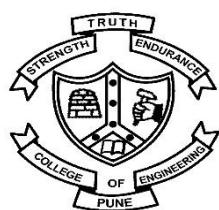
LOGIN FAILED

YOUR USERNAME AND/OR PASSWORD DO NOT MATCH.

RETRY

Sentence case text is easier to read, and quick to understand.

Uppercase text makes readability slower.



What is your opinion ?



Name	James Kale
Company	Braddim
City	Albany
State	New York
Zip Code	44005

Please enter a valid Zip Code for your region.

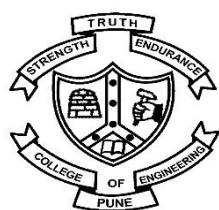


The form you filled contains errors.

Name	James Kale
Company	Braddim
City	Albany
State	New York
Zip Code	44005

User is informed about invalid input positively.

The missing information is conveyed in negative words.



What is your opinion ?



Name	<input type="text"/>
Company	<input type="text"/>
City	<input type="text"/> ! City is required.
State	<input type="text"/>
Zip Code	<input type="text"/> ! Zip Code is required.

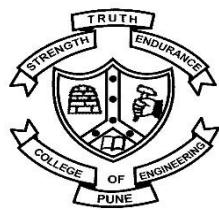


City and Zip Code is required.

Name	<input type="text"/>
Company	<input type="text"/>
City	<input type="text"/> !
State	<input type="text"/>
Zip Code	<input type="text"/> !

It is better to display error message along with relevant options.

User will take a while to relate the error message with options



Content

Introduction

Error Messages

Display Design

Window Design

1

2

3

4

Display Design

Outline

- Layout of information on the display, screen graphics, element positioning, etc..
- Display designs provide all necessary data in proper sequence to carry out task

College of Engineering, Pune
An Autonomous Institute of the Government of Maharashtra

HOME ABOUT ADMISSIONS DEPARTMENTS ACADEMICS CLUBS RESOURCES PLACEMENT CELL

**BHAU INSTITUTE OF INNOVATION,
ENTREPRENEURSHIP, AND LEADERSHIP
COLLEGE OF ENGINEERING PUNE
Ignited Innovators of India (i2i)**

INAUGURATION CEREMONY



**CHEIF GUEST
DR. ANIL SAHASRABUDHE
(Chairman of AICTE,
Former Director COEP)**

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" As an Engineering Student,
How do I become Successful? "**

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Colleges with 80 lacs+ Students**

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MINI AUDITORIUM
Inauguration Ceremony of Ignited Innovators of India on September 27, 2018 at 3 PM

EAT-N
Powering Business Worldwide

CAMPUS NEWS UPCOMING EVENTS NOTICES TENDERS RECRUITMENT HIR RANKING NPTEL

September

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

NAVIGATION

- + Home
- + COEP Mall
- + COEP Moodle
- + Virtual Lab
- + Our Location
- + Site Map

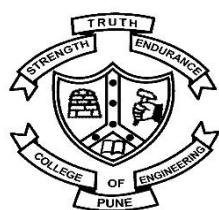
आशियाई क्रीडा स्पर्धेतील विजेत्या खेळाढूंचा सत्कार सोहळा
प्रतीक फाळके व रिधिमा बुद्धिराजा विजयी !
सौ.ओ.ई.पी. चा सर्वात औलुसुक्याचा क्षण म्हणजेच सालाबाद प्रमाणे होण्याचा वार्षिक महाविद्यालयीन निवडणुका. दि. २८ अगस्ट २०१८ रोजी जिमखाना सचिव व सेहसमेलन सचिव या पदासाठी महाविद्यालयात निवडणुका पार पडल्या.

Coep PLAY's tune on Mumbai's STREET

Often termed as COEP's 'most consistent achiever club', Junoon, our very own StreetPlay team, this time not only proved but also has ascended it's stature by bagging the 1st prize in recently held St.Xaviers', Malhar Fest.

1 of 18 next

COEP ALUMNI ACHIEVEMENTS CAMPUS FESTIVALS VIRTUAL LABS TEQIP - III LIBRARY INFORMATION CONTACT US



Outline

Flipkart
Explore Plus[®]

Search for products, brands and more

Login & Signup More Cart

Electronics TVs & Appliances Men Women Baby & Kids Home & Furniture Sports, Books & More Offer Zone

POCO

Best Rated Flagship In India*
POCO F1 (6GB|128GB)
Just ₹23,999
Flagship Snapdragon 845 Processor

*Among smartphones with more than 15,000 ratings on Flipkart

Deals of the Day 00:18:05 Left

VIEW ALL

Timex, Provogue, Newpo... Min.70% + Extra5% Off Watches

Laptop Bags From ₹299 HP, Dell & More

Decorative Wall Stickers From ₹79 Best Selling Range

Mobile Accessories From ₹149 Holder, Charger & more

Skybags, American Touri... 40-80% + Extra 5% Off Backpacks, Trolleys, Duff...

Women's Footwear Upto 60%+Extra 10% Off Puma, Miss CL & more

Trimmer, Straightener, Dr... From ₹315 Nova, Syska, Panasonic, ...

NOKIA
Launching Nokia 5.1 Plus Revealing Today, 2 PM

NOTIFY ME >

#OnlyOnFlipkart

The Big Brand Edition 30-70% OFF Levi's, Puma, Skybags...

India Ka FASHION CAPITAL

Mandatory Monday

Buy 2, Get 5% Off
Buy 3, Get 10% Off

SHOP NOW

More Bundle Offers inside

JUMBO BACHAT BAZAAR

realme

Max Power, Max Style Stay Tuned

Launching on 27th Sept, 12 Noon

Half a Million Mi TVs Sold in 6+ Months!

#OnlyOnFlipkart

Extended Warranty for Mobiles

Featured Brands

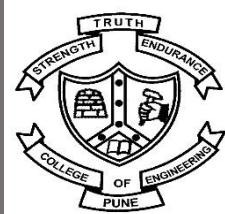
Livpure 1 Year Maintenance Plan Just ₹1,499

Screen Damage? Keep Calm... and Get Instant Cash for Screen Repair!

Half a Million Mi TVs Sold in 6+ Months!

#OnlyOnFlipkart

Extended Warranty for Mobiles



Display Design

Goal

- Avoid confusion,
- Reduce search time,
- Increase subjective satisfaction

The screenshot shows a dark-themed website header with three main navigation items: 'DEPARTMENTS', 'ACADEMICS', and 'CLUBS'. The 'DEPARTMENTS' item is currently selected, indicated by a red border around its dropdown menu. The dropdown menu lists ten academic departments: Applied Sciences, BHAU, Civil, Computer & IT, Electrical, Electronics And Telecommunication, Instrumentation and Control, Mathematics, and Mechanical. To the right of each department name is a small red triangle pointing right, followed by a list of links: Faculty, Facilities, Research & Publications, Time Table, Syllabus, Photo Gallary, Liberal Learning Courses (LLC), Facilities, and Counselling Centre.

- Applied Sciences
- BHAU
- Civil
- Computer & IT
- Electrical
- Electronics And Telecommunication
- Instrumentation and Control
- Mathematics
- Mechanical

- Faculty
- Facilities
- Research & Publications
- Time Table
- Syllabus
- Photo Gallary
- Liberal Learning Courses (LLC)
- Facilities
- Counselling Centre

Display Design



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SEARCH

Search...



CAMPUS NEWS

UPCOMING EVENTS

NOTICES

TENDERS

RECRUITMENT

NIRF RANKING

NPTEL

आशियाई क्रीडा स्पर्धेतील विजेत्या खेळाडूंचा सत्कार सोहळा

प्रतीक फाळके व रिधिमा बुद्धिराजा विजयी !

सौ.ओ.ई.पी. चा सर्वात औत्सुक्याचा क्षण म्हणजेच सालाबाद प्रमाणे होण्यान्या वार्षिक महाविद्यालयीन निवडणूका. दि. २८ अगस्ट २०१८ रोजी जिमखाना सचिव व सेहसपेलन सचिव या पदासाठी महाविद्यालयात निवडणूका पार पठल्या.

Coep PLAY's tune on Mumbai's STREET

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not only proved but also has ascended it's stature by bagging the 1st prize in recently held St.Xaviers',
Malhar Fest.

1 of 18 next >

General Rule

- Always start with **task analysis** without consideration of display size or available fonts.

HOME

ABOUT

ADMISSIONS

DEPARTMENTS

ACADEMICS

CLUBS

RESOURCES

PLACEMENT CELL

COEP ALUMNI

ACHIEVEMENTS

CAMPUS FESTIVALS

VIRTUAL LABS

TEQIP - III

LIBRARY

INFORMATION

CONTACT US

1 of 18 next >

COEP ALUMNI

ACHIEVEMENTS

CAMPUS FESTIVALS

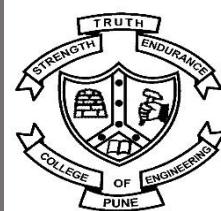
VIRTUAL LABS

TEQIP - III

LIBRARY

INFORMATION

CONTACT US



Display Design

Consider

- Provide all necessary data in a proper sequence to carry out the task
- Meaningful grouping of items.
- Use consistent sequences of groups and orderly formats

CAMPUS NEWS UPCOMING EVENTS NOTICES TENDERS RECRUITMENT NIRF RANKING NPTEL

आशियाई क्रीडा स्पर्धेतील विजेत्या खेळाडूंचा सत्कार सोहळा

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1 of 18 [next >](#)

Mechanical

Counselling Centre

HOME

ABOUT

ADMISSIONS

DEPARTMENTS

ACADEMICS

CLUBS

RESOURCES

PLACEMENT CELL

COEP ALUMNI

ACHIEVEMENTS

CAMPUS FESTIVALS

VIRTUAL LABS

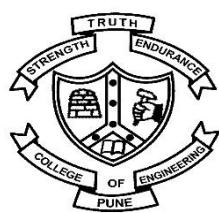
TEQIP - III

LIBRARY

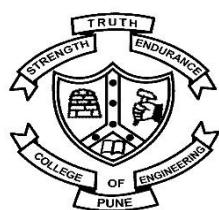
INFORMATION

CONTACT US

Display Design



The image is a screenshot of the Yahoo homepage. At the top, there's a navigation bar with links for Home, Mail, News, Cricket, Celebrity, Movies, Lifestyle, Flickr, Mobile, and More. The main search bar is on the right. Below the navigation, there's a secondary horizontal menu with links for Mail, Cricket, News, Finance, Lifestyle, Movies, Celebrity, Shopping, and More... A large banner in the center promotes the 'New Yahoo Cricket App' with a download link for both the App Store and Google Play. To the left of the banner is the Yahoo logo. Below the banner, there are several news thumbnails. One thumbnail shows Amit Shah speaking at a podium. Another shows Smriti Irani laughing. A third shows a man in an orange robe. A fourth thumbnail has the headline 'Shah, Yogi, Smriti in Rahul's Amethi: 10 points' and a subtext about BJP leaders visiting Gandhi's constituency. Other news snippets include a ban on firecrackers in Delhi, cricketers who didn't know they were in movies, the top 10 banks in India by total assets, Salman Khan's Bigg Boss 11 script, and Fatima Sana Shaikh being trolled. At the bottom, there's a sponsored section for Rentomojo furniture rental, a weather forecast for Pune (cloudy with 27°), and a 'Featured Picks' section.



Display Design



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SEARCH

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PLACEMENT CELL

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NAVIGATION

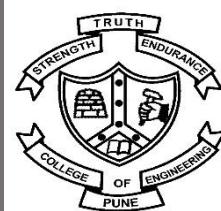
+ Home

+ COEP Mail

+ COEP Moodle

+ Virtual Lab

10/12/2019



Display Design

Complexity of Designer Task

Elegance and simplicity: Unity, refinement, and fitness

Scale, contrast, and proportion: Clarity, harmony, activity, restraint

Organization and visual structure: Grouping, hierarchy, relationship, balance

Module and program: Focus, flexibility, and consistent application

Image and representation: Immediacy, generality, cohesiveness, and characterization

Style: Distinctiveness, integrity, comprehensiveness, appropriateness

First Name:

Last Name:

Email:

(Your email address will be your username)

Re-type Email:

Password:

(Min. 8 characters, 1 number, case-sensitive)

Re-type Password:

Address:

City:

State: Choose a state

Zip Code: Optional

Phone: Mobile

No spaces or dashes

Date of Birth: Month Day Year ?

Gender: Choose a gender ?

Security Question: Choose a security question ?

Security Answer:

(Not case-sensitive)

Personal Information

First Name:

Last Name:

Date of Birth: Month Day Year ?

Gender: Choose a gender ?

Account Information

Email:

(Your email address will be your username)

Re-type Email:

Password:

(Min. 8 characters, 1 number, case-sensitive)

Re-type Password:

Security Question: Choose a security question ?

Security Answer:
(Not case-sensitive)

Contact Information

Address:

City:

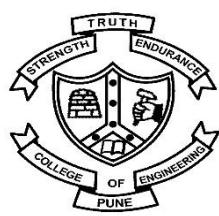
State: Choose a state

Zip Code: Optional

Phone: Mobile

No spaces or dashes





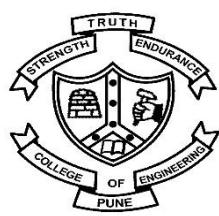
Field Layout

Example

- An employee record with information about a spouse and children:

Poor

- TAYLOR,SUSAN034787331WILLIAM TAYLOR
THOMAS10291974ANN08211977ALEXANDRA09081972



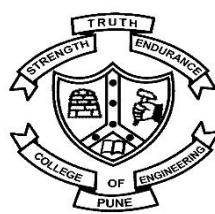
Field Layout

Step- 1

- Improving the format, blanks and separate lines can distinguish fields:

Better

- TAYLOR, SUSAN 034787331 WILLIAM TAYLOR
THOMAS 10291974
ANN 08211977
ALEXANDRA 09081972



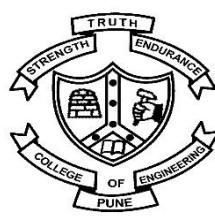
Field Layout

Step- 2

- Listed in chronological order.
- Alignment of the dates.
- Familiar separators for the dates and the employee's social security number

Better

SUSAN TAYLOR	034-78-7331	WILLIAM TAYLOR
ALEXANDRA	09-08-1972	
THOMAS	10-29-1974	
ANN	08-21-1977	



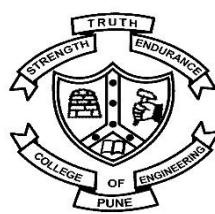
Field Layout

Step- 3

- Adding labels.
- Mixed upper and lowercase letters for the labels and contents.
- The label for social security number can also be abbreviated.

Better

Employee:	Susan Taylor	SSN: 034-78-7331
Spouse:	William Taylor	
Children:	Names	Birthdates
	Alexandra	09-08-1972
	Thomas	10-29-1974
	Ann	08-21-1977



Field Layout

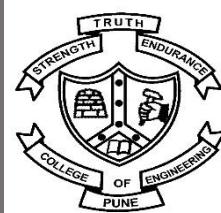
Step- 4

- Finally, if boxes are available, then an orderly pattern is sometimes more appealing.

Employee: Susan Tylor **SSN:** 034-78-7331

Spouse: William Taylor

Children:	Names	Birthdates
	Alexandra	09-08-1972
	Thomas	10-29-1974
	Ann	08-21-1977



Display Design

Field Layout

Blank spaces and separate lines can distinguish fields.

Names in chronological order, alignment of dates, familiar date separators.

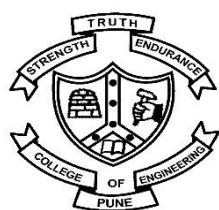
Labels are helpful for all.

Distinguish labels from data with case, boldfacing, etc.

If boxes are available they can be used to make a more appealing display, but they consume screen space.

Specify the date format for international audiences

Other coding categories – background shading, color, and graphic icons



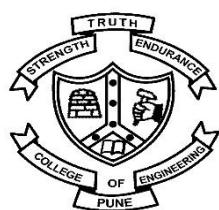
Display Design

Display- Complexity Metrics

Knowledge of the users' tasks and abilities is key to designing effective screen displays

Tullis (1997) developed four task-independent metrics for alphanumeric displays

1. Overall Density
2. Local Density
3. Grouping
4. Layout Complexity



Display-Complexity Metrics

Overall Density

Number of filled character spaces as a percentage of total spaces available

Local Density

Average number of filled character spaces in a five-degree visual angle around each character, expressed as percentage of available spaces in the circles and weighted by distance from the character

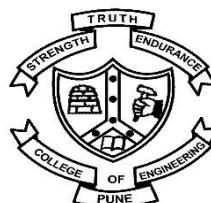
Grouping

Number of groups of “connected” characters, where a connection is any pair of characters separated by less than twice the mean of the distances between each character and its nearest neighbor

Average visual angle subtended by groups and weighted by the number of characters in the group

Layout Complexity

Complexity, as defined in information theory, of the distribution of horizontal and vertical distances of each label and data item from a standard point on the display



Robinson, Christopher #XXX-20-4627 Unit: 5E, 5133D M/F: Ph:301-XXX-5885

	<CBC>	Result	Normal	Range	Units
11/20	Wbc	5.0	4.8	10.8	th/cumm
22:55	Rbc	4.78	4.7	6.1	m/cumm
	Hgb	12.8	14.0	18.0	g/dL
	Hct	37.9	42.0	52.0	%
	Plt	163.0	130.0	400.0	th/cumm
	Mcv	88.5	82.0	101.0	fL
	Mch	30.6	27.0	34.0	picogms
	Mchc	34.6	32.0	36.0	g/dL
	Rdw	14.5	11.5	14.5	%
	Mpw	9.3	7.4	10.4	fL

Key: * - abnormal

PgDn for more

Robinson, Christopher #XXX-20-4627 Unit: 5E, 5133D M/F: Ph:301-XXX-5885

	<DIFF>	Result	Normal	Range	Unit
11/20	Segs	35	34	- 75	%
22:55	Bands	5	0	9	%
	Lymphs	33	10	- 49	%
	Monos	33	2	- 14	%
	Eosino	5	0	8	%
	Baso	2	0	2	%
	Atypicalymph	20	0	0	%
	Meta	0	0	0	%
	Myleo	0	0	0	%
	Platelets (estimated)				adeq
	Key: * = Abnormal				
	PgDn for more				

Robinson, Christopher #XXX-20-4627 Unit: 5E, 5133D M/13 Ph:301-XXX-5885

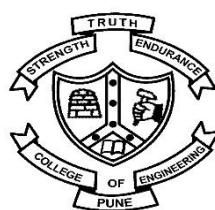
	<CBC>	Result	Normal Range	Units	<DIFF>	Result	Norm	Range	Unit
10/23	Wbc	5.0	4.8 - 10.8	th/curnm	Segs	40	34	- 74	%
0600	Rbc	4.78	4.7 - 6.1	m/eummm	Bands	5	0	- 9	%
	Hgb	15.1	14.0 - 18.0	g/dL	Lymphs	33	10	- 49	%
	Hct	47.9	42.0 - 52.0	%	Monos	10	2	- 14	%
	PH	163.0	130.0 - 400.0	th/curnm	Eosino	5	0	- 8	%
	Mcv	88.5	82.0 - 101.0	fL	Baso	2	2	- 2	%
	Mch	30.6	27.0 - 34.0	picogms	Atypicalph	0	0	- 0	%
	Mchc	34.6	32.0 - 36.0	g/dL	Meta	0	0	- 0	%
	Rdw	14.5	11.5 - 14.5	%	Myelo	0	0	- 0	%
	Mpv	8.3	7.4 - 10.4	fL	Pit	(estm)			adeq
<MORPHOLOGY		Macrocytosis	1+	Basophilic Stippling	1+	Toxic Gran Occ			
Hypochromia	1+	Polychromasia	1+	Target Cells	3+	Normocytic	No		

Key: * = Abnormal Priority: Routine Acc#: 122045-015212

Ordered by: Holland, Daniel on 10/22/91, 10:00 Ord#: 900928-HH1131

Personal Data - PRIVACY ACT OF 1974 (PL 93-579)

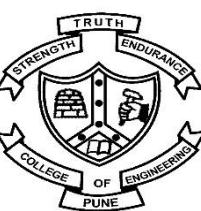
- Average task time of 9.4 seconds - low-density version
5.3 seconds - high-density version.
- Switching windows and reorienting to the new material appears to be far more destructive of concentration than scanning dense displays.
- Accuracy and subjective satisfaction were not significantly different.



Display-Complexity Metrics

To: Knoxville, TN

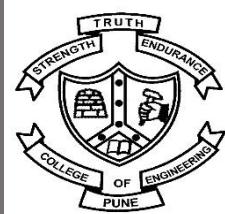
Atlanta, GA Dp: 9:28a Ar: 10:10a Flt: DL 1704 1st: 97.00 Coach: 86.00
Atlanta, GA Dp: 12:28p Ar: 1:10p Flt: DL 152 1st: 97.00 Coach: 86.00
Atlanta, GA Dp: 4:58p Ar: 5:40p Flt: DL 418 1st: 97.00 Coach: 86.00
Atlanta, GA Dp: 7:41p Ar: 8:25p Flt: DL 1126 1st: 97.00 Coach: 86.00
Chicago, Ill. Dp: 1:45p Ar: 5:39p Flt: AL 58 1st: 190.00 Coach: 161.00
Chicago, Ill. Dp: 6:30p Ar: 9:35p Flt: DL 675 1st: 190.00 Coach: 161.00
Chicago, Ill. Dp: 6:50p Ar: 9:55p Flt: RC 398 1st: 190.00 Coach: 161.00
Cincinnati, OH Dp: 12:05p Ar: 1:10p Flt: FW 453 1st: 118.00 Coach: 66.85
Cincinnati, OH Dp: 5:25p Ar: 6:30p Flt: FW 455 1st: 118.00 Coach: 66.85
Dallas, TX Dp: 5:55p Ar: 9:56p Flt: AL 360 1st: 365.00 Coach: 215.00
Dayton, OH Dp: 11:20a Ar: 1:10p Flt: FW 453 1st: 189.00 Coach: 108.00
Dayton, OH Dp: 4:40 Ar: 6:30p Flt: FW 455 1st: 189.00 Coach: 108.00
Detroit, Mich. Dp: 9:10a Ar: 1:10p Flt: FW 453 1st: 183.00 Coach: 106.00
Detroit, Mich. Dp: 2:35p Ar: 6:30p Flt: FW 455 1st: 183.00 Coach: 106.00



Display-Complexity Metrics

To: Atlanta, GA

Departs	Arrives	Flight	
Asheville, NC		First: \$92.57	Coach: \$66.85
7:20a	8:05a	PI 299	
10:10a	10:55a	PI 203	
4:20p	5:00p	PI 259	
Austin, TX		First: \$263.00	Coach: \$221.00
8:15a	11:15a	EA 530	
8:40a	11:39a	DL 212	
2:00p	5:00p	DL 348	
7:15p	11:26p	DL 1654	
Baltimore, MD		First: \$209.00	Coach: \$167.00
7:00a	8:35a	DL 1767	
7:50a	9:32a	EA 631	
8:45a	10:20a	DL 1610	
11:15a	12:35p	EA 147	
1:35p	3:10p	DL 1731	
2:35p	4:16p	EA 141	



Display-Complexity Metrics

Sears (1993) developed task-dependent metric

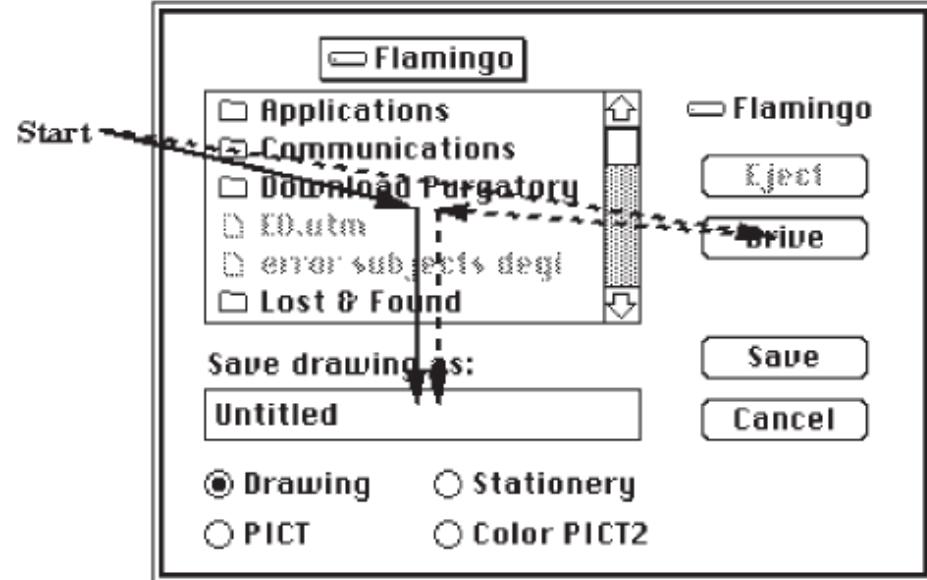
Called layout appropriateness to assess whether spatial layout is in accordance with users' tasks

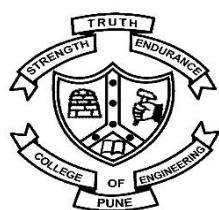
Focuses on how user moves through elements of the display when performing task

Optimal layout minimizes visual scanning

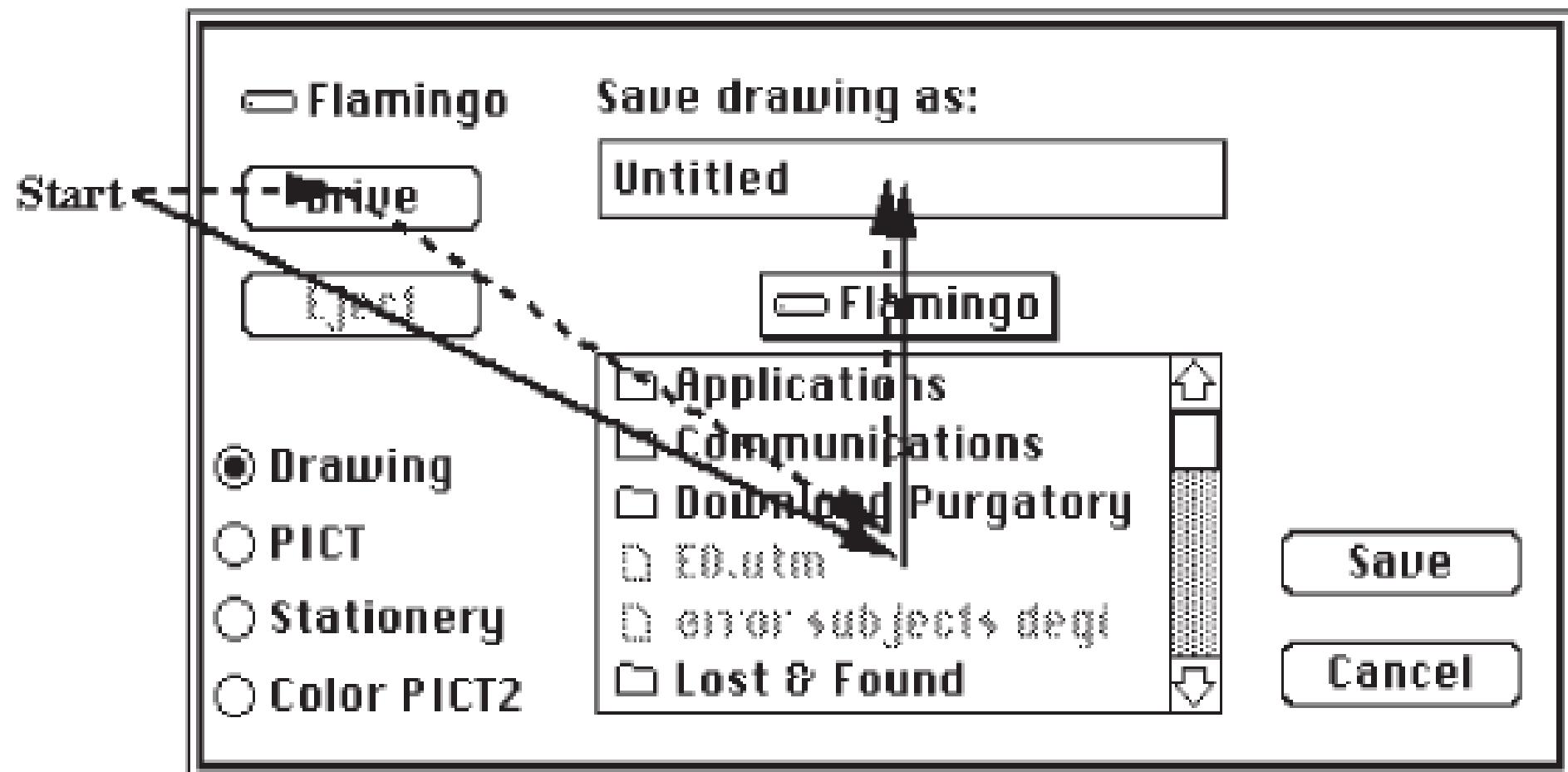
However, may conflict with expectations about placement of fields, etc.

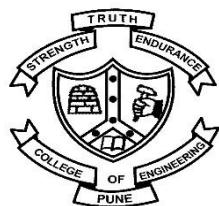
In figure, solid most frequent





Display-Complexity Metrics





Content

Introduction

Error Messages

Display Design

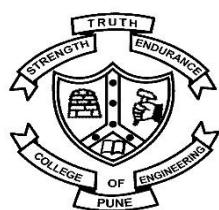
Window Design

1

2

3

4



Multiple Windows

The screenshot shows a Windows desktop environment with three windows open:

- Store**: A window displaying various apps like "The Weather Channel" and "Virtual Desktop".
- File Explorer**: A window showing "Frequent folders" including Desktop, Downloads, Documents, Pictures, Music, and Videos.
- Kepler-452b - Wikipedia, the free encyclopedia**: A window displaying the Wikipedia article about Kepler-452b, featuring a large image of the exoplanet.

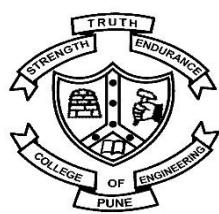
The desktop interface includes a taskbar at the bottom with icons for Ask me anything, File Explorer, and the Start button. A "New desktop" button is visible in the bottom right corner.



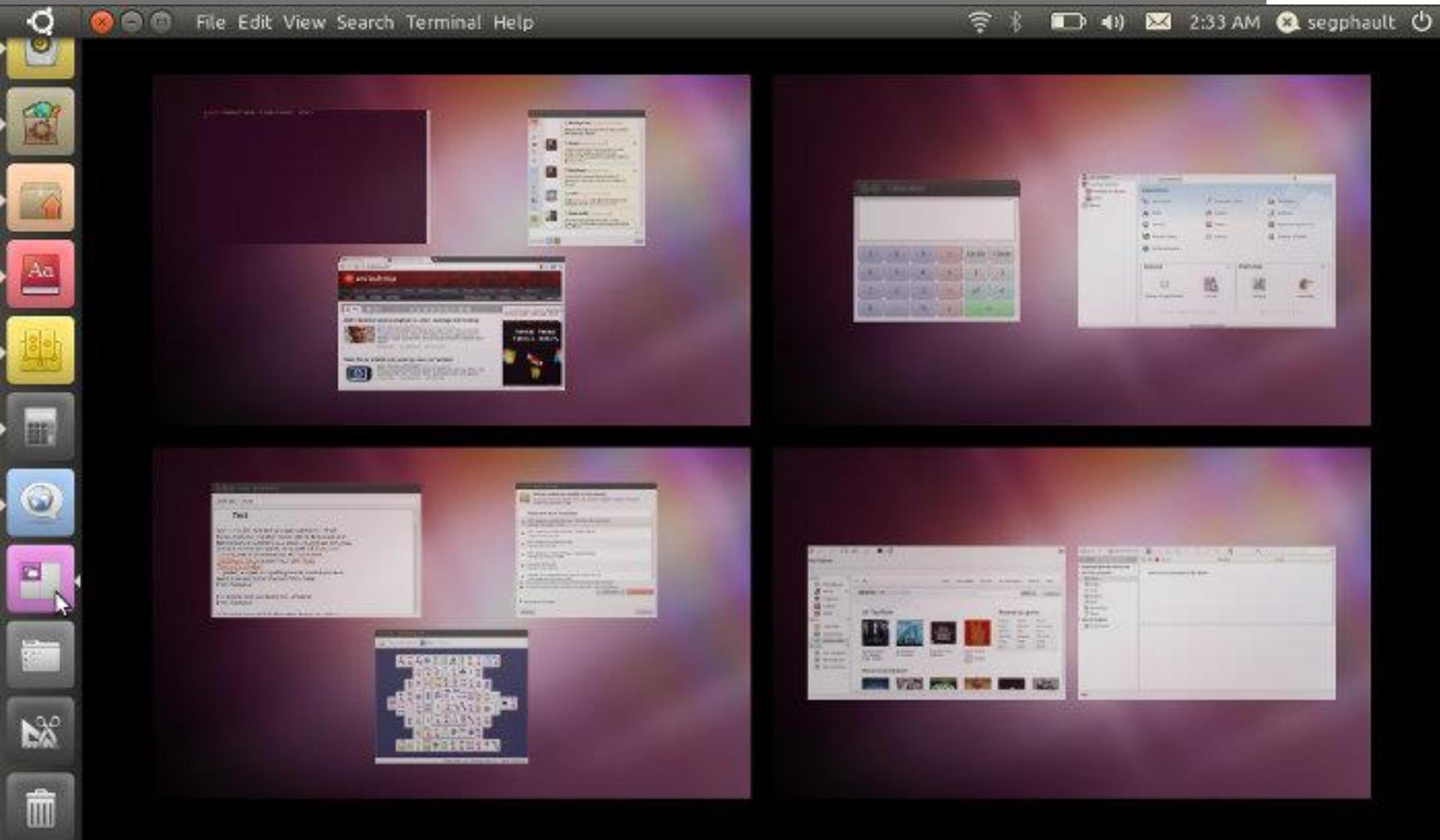
Ask me anything

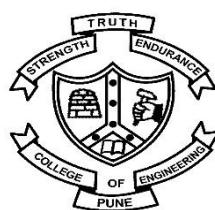


12:13 PM
7/29/15

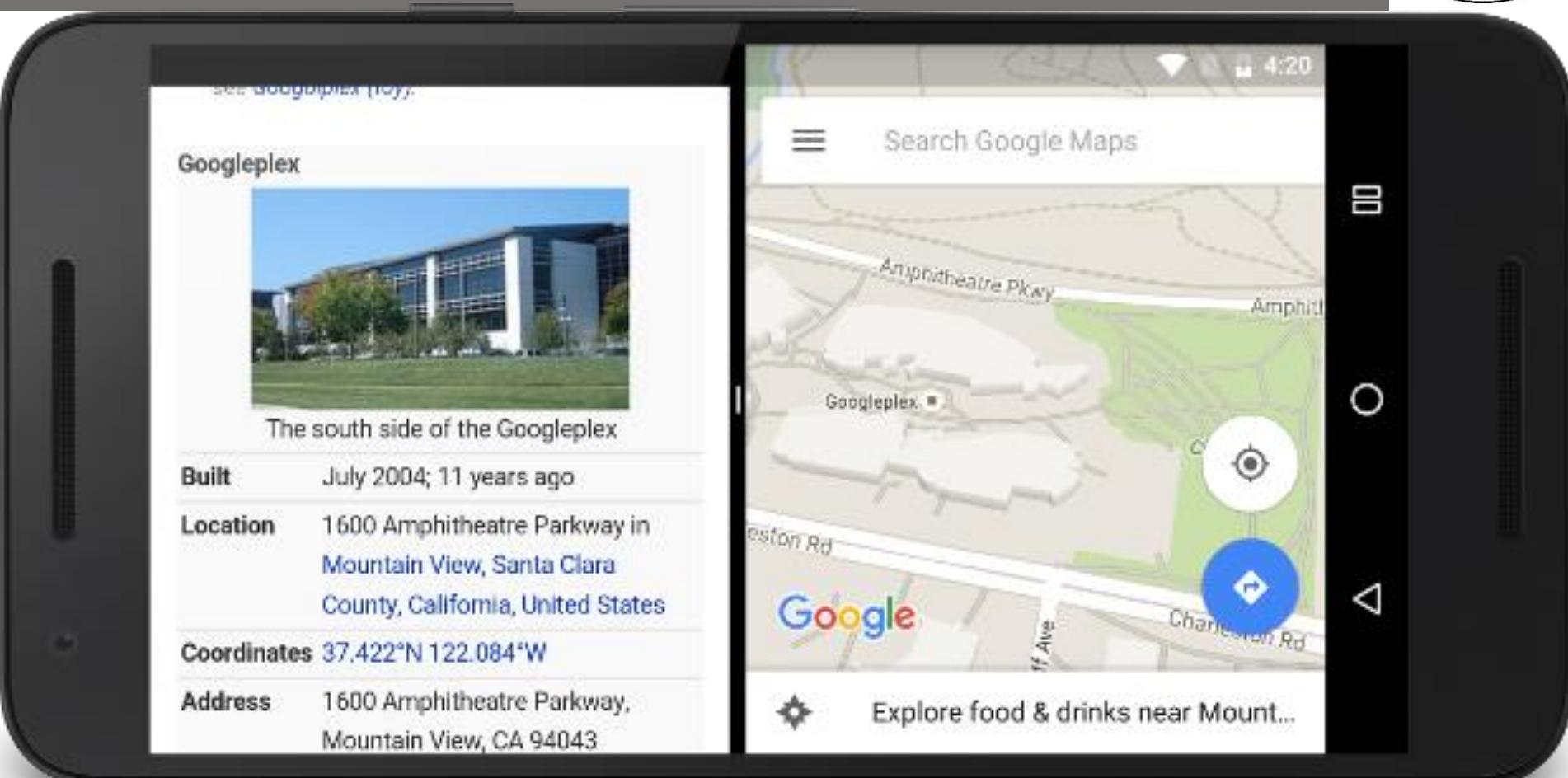


Multiple Windows

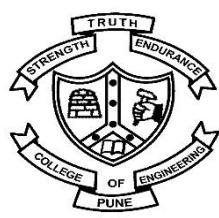




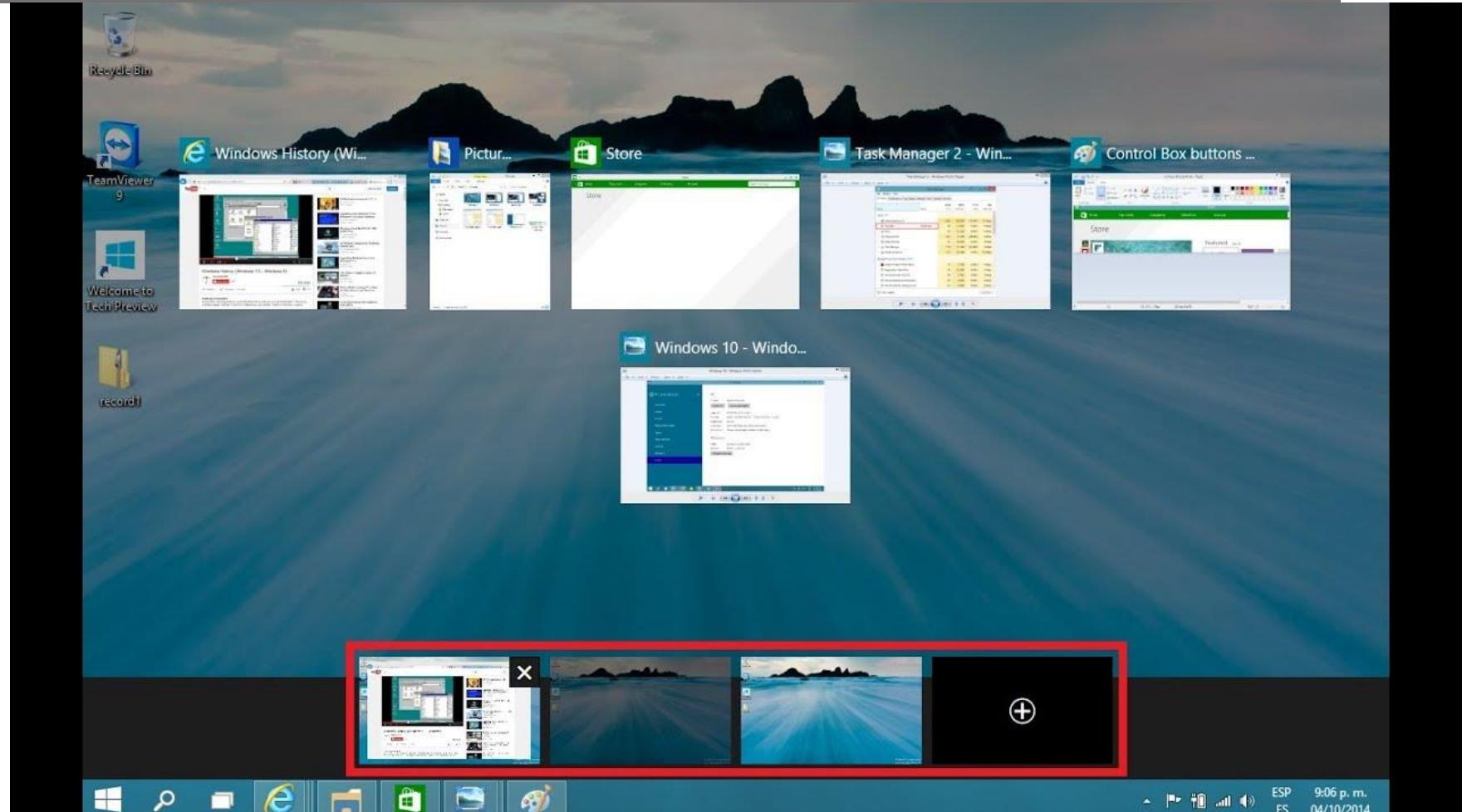
Multiple Windows



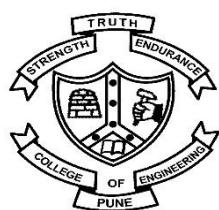
Users need to consult multiple sources rapidly to carry out their tasks



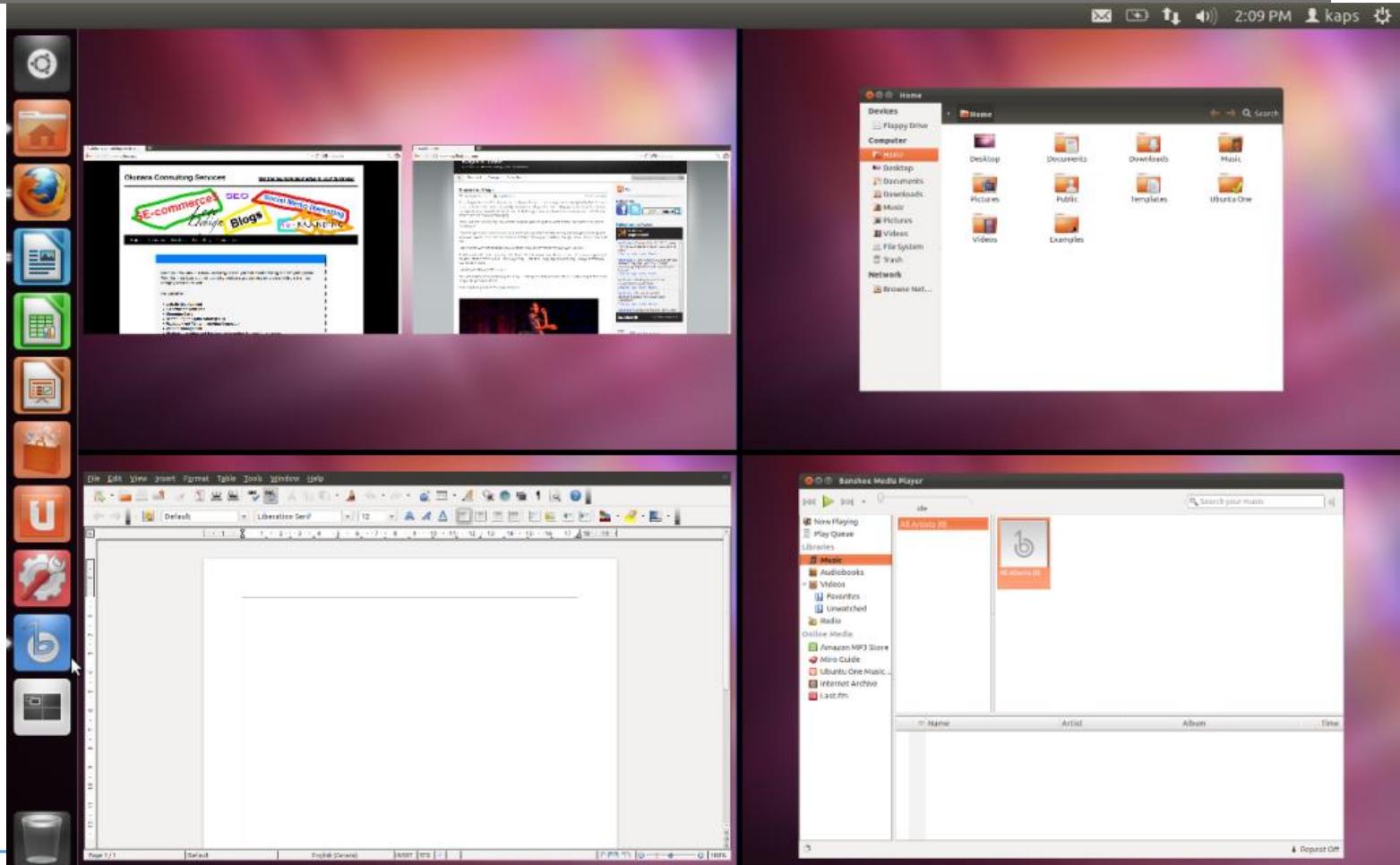
Multiple Windows



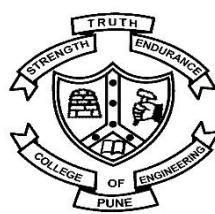
Reduce *window housekeeping* actions can apply direct-manipulation strategy to window actions



Multiple Windows



Advanced users who work on multiple tasks can switch among collections of windows called *workspaces* or *rooms*.

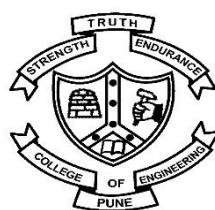


Window Design

Window Design

Coordinating Multiple Windows

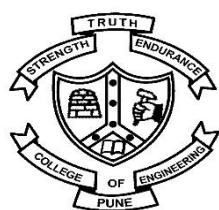
Image Browsing



Multiple Windows Coordination

Windows appear, change contents, and close as a direct result of user actions in the task domain.

The screenshot shows a web browser with several tabs open. The active tab is the COEP homepage (www.coep.org.in). The browser interface includes standard controls like back, forward, and search. The COEP website features a prominent logo at the top left, followed by the text "College of Engineering, Pune" and "An Autonomous Institute of the Government of Maharashtra". A navigation bar with links for Home, About, Admissions, Departments, Academics, Clubs, Resources, and Placement Cell is present. Below the navigation is a calendar for October. To the right of the calendar is a news section with a large headline about two students designing a solar panel laminator. Further down the page, there is another news item about FY MTech counseling and a link to a student invention. The bottom of the page has a navigation sidebar with links to Home, COEP Mail, COEP Moodle, and Virtual Lab. The URL www.coep.org.in is visible at the very bottom of the browser window.



Multiple Windows Coordination

Task-specific coordination based on sequences of actions

The screenshot shows the Windows Control Panel with several windows open, illustrating task-specific coordination:

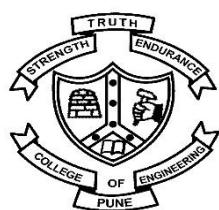
- Network and Sharing Center**: The main window showing general network status and activity.
- Ethernet Status**: A detailed view of the Ethernet connection, including connectivity, media state, duration, and speed.
- Ethernet Properties**: A window showing the connection using "Realtek PCIe GBE Family Controller". It lists items like QoS Packet Scheduler, Microsoft Network Adapter Multiplexor Protocol, Microsoft LLDP Protocol Driver, Link-Layer Topology Discovery Mapper I/O, Link-Layer Topology Discovery Responder, Internet Protocol Version 6 (TCP/IPv6), and Internet Protocol Version 4 (TCP/IPv4).
- Internet Protocol Version 4 (TCP/IPv4) Properties**: A sub-dialog of the Ethernet Properties window, showing options for getting IP settings (Obtain an IP address automatically or Use the following IP address) and DNS server configuration.
- Advanced TCP/IP Settings**: A detailed dialog for configuring IP addresses, default gateways, and DNS settings. It includes tabs for IP Settings, DNS, and WINS, and sections for IP addresses, Default gateways, and Preferred DNS server.

See also

[HomeGroup](#)

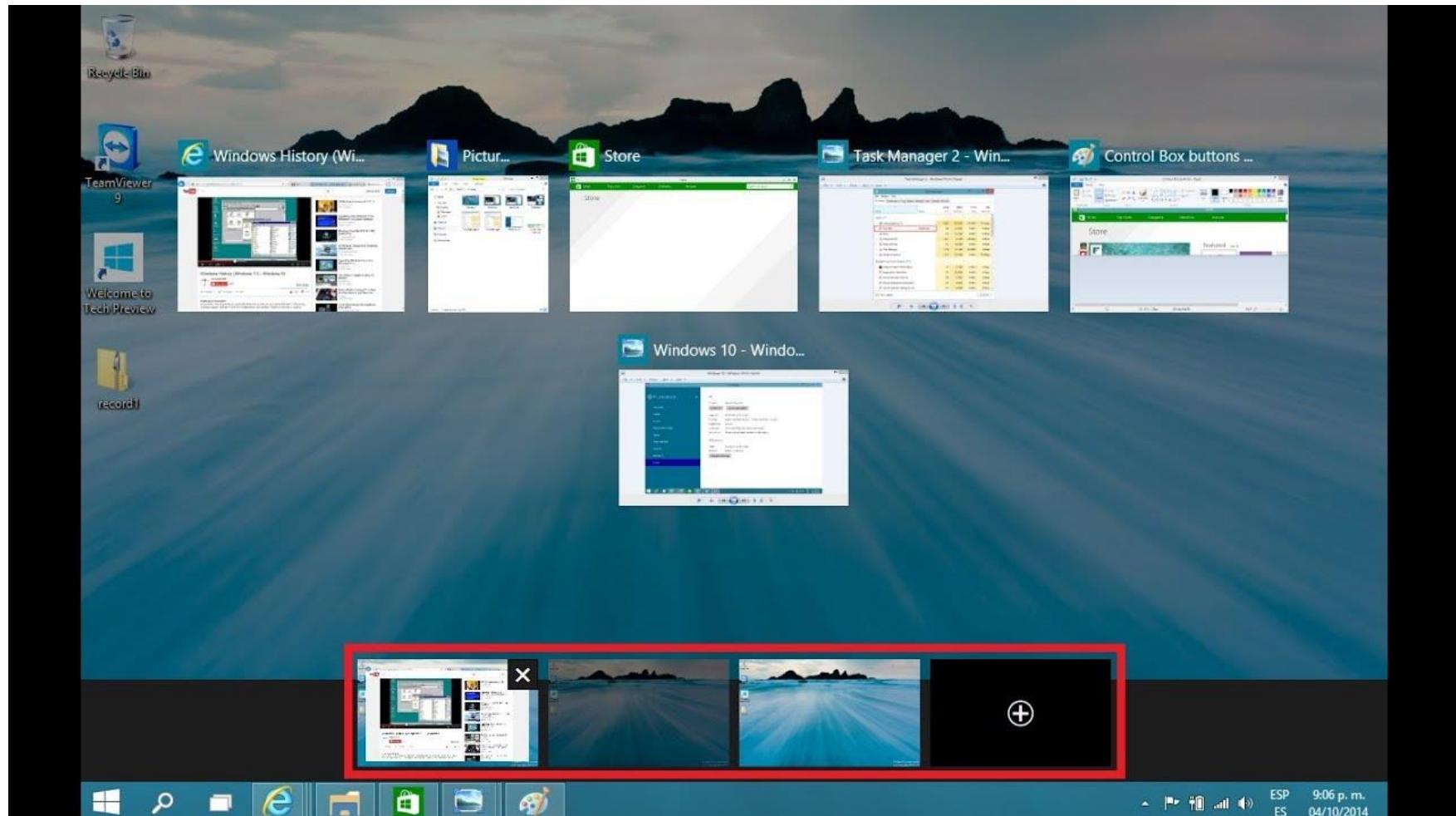
[Internet Options](#)

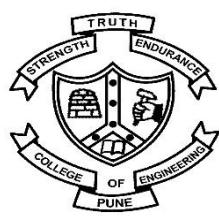
[Windows Firewall](#)



Multiple Windows Coordination

Move among relatively independent subtasks





Multiple Windows

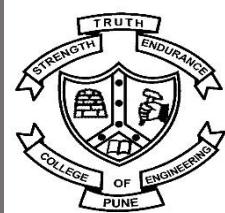
Interface Coordination

Synchronized scrolling

Hierarchical browsing

Opening/closing of dependent windows

Saving/opening of window state



Synchronized Scrolling

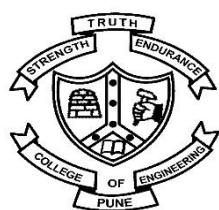
Scroll two document at same time

This is great way to compare documents line by line or scan for differences

The screenshot shows two Microsoft Excel windows side-by-side. The left window is titled 'version1.xlsx' and the right window is titled 'version2.xlsx'. Both windows show a list of items in columns A, B, and C. A red callout box with the text 'Both sheets scroll' points to the vertical scroll bar of the left sheet. A green callout box on the right contains three options: 'View Side by Side', 'Synchronous Scrolling' (which is highlighted in yellow), and 'Reset Window Position'. The 'Window' tab is selected in the ribbon, and the 'Synchronous Scrolling' button is located under the 'Window' section.

	A	B	C
4	Condiments	Peanut butter and jell saur kraut	
5	Fun	1	
6	Joy	1	
7	Hunger		
8	Angst		
9	Regret		
10	Bread		
11	Cheese		
12	Condiments	Peanut butter and jell saur kraut	
13	Fun	33	
14	Joy	44	
15	Hunger	124	
16	Angst	111	
17	Regret	11	
18	Bread	White	Marble Rye
19	Cheese	None	Swiss
20	Condiments	Peanut butter and jell saur kraut	
21	Fun	33	2

	A	B	C
4	Condiments		
5	Fun		
6	Joy		
7	Hunger		
8	Angst		
9	Regret		
10	Bread		
11	Cheese		
12	Condiments		
13	Fun	33	2
14	Joy	51	2
15	Hunger	124	4
16	Angst	111	41
17	Regret	11	4
18	Bread	White	Marble Rye
19	Cheese	None	Swiss
20	Condiments	Peanut butter and jell saur kraut	
21	Fun	33	2



Hierarchical Browsing

EULA

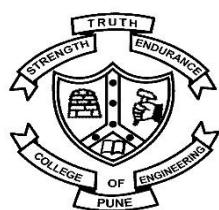
File Home Share View

« Bluetooth Driver (Realtek, Atheros, Broadcom) ▶ Broadcom ▶ 43142 ▶ 12.0.0.9060 ▶ Custom ▶ EULA

Favorites Homegroup This PC Desktop Documents Downloads Music Pictures Videos Local Disk (C:) AMD drivers Bluetooth Driver (Realtek, Atheros, Broa Atheros Broadcom 43142 12.0.0.9060 Custom EULA Win32 Win64 43162

36 items

Name	Date modified	Type	Size
ara_license	3/3/2009 2:43 PM	Rich Text Format	144 KB
bgr_license	8/21/2009 7:02 PM	Rich Text Format	218 KB
br_license	5/19/2006 10:04 PM	Rich Text Format	189 KB
ch_license	5/19/2006 10:04 PM	Rich Text Format	201 KB
chs_license	5/19/2006 10:04 PM	Rich Text Format	232 KB
csy_license	3/3/2009 2:43 PM	Rich Text Format	223 KB
da_license	5/19/2006 10:04 PM	Rich Text Format	189 KB
du_license	5/19/2006 10:04 PM	Rich Text Format	189 KB
ell_license	3/3/2009 2:42 PM	Rich Text Format	243 KB
eti_license	8/21/2009 7:02 PM	Rich Text Format	202 KB
fi_license	5/19/2006 10:04 PM	Rich Text Format	189 KB
fr_license	5/19/2006 10:04 PM	Rich Text Format	189 KB
gr_license	11/1/2009 1:59 PM	Rich Text Format	9 KB
heb_license	3/3/2009 2:42 PM	Rich Text Format	261 KB
hrv_license	3/3/2009 2:42 PM	Rich Text Format	221 KB
hun_license	3/3/2009 2:42 PM	Rich Text Format	223 KB
it_license	5/19/2006 10:04 PM	Rich Text Format	189 KB
jp_license	5/19/2006 10:04 PM	Rich Text Format	239 KB
ko_license	5/19/2006 10:04 PM	Rich Text Format	340 KB
license	9/9/2009 8:45 PM	Rich Text Format	196 KB
lth_license	8/21/2009 7:01 PM	Rich Text Format	200 KB
lvi_license	8/21/2009 7:01 PM	Rich Text Format	201 KB
nw_license	5/19/2006 10:04 PM	Rich Text Format	188 KB



Opening/closing of Dependent windows

Opening a window may cause automatic simultaneous opening of dependent windows in a nearby location.

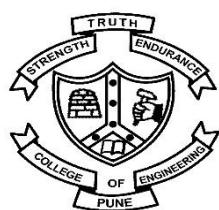
The screenshot illustrates the concept of dependent windows in a Windows environment. In the background, the "Network and Sharing Center" is open. In the foreground, three windows are stacked vertically. The top window is "Ethernet Properties" (Networking tab selected). The middle window is "Internet Protocol Version 4 (TCP/IPv4) Properties" (General tab selected). The bottom window is "Advanced TCP/IP Settings" (IP Settings tab selected). All three windows have their title bars and close buttons visible, demonstrating how multiple related windows can be opened simultaneously.

See also

HomeGroup

Internet Options

Windows Firewall



Saving/opening of window state

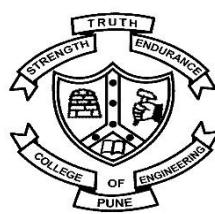
A natural extension of saving a document is to save the current state of the display, with all windows and their contents.

This action would create a new icon representing the current state; clicking on the icon would reproduce that state.

The screenshot illustrates the concept of window states. It shows a desktop environment with several windows open simultaneously:

- Frontmost Window:** A "Save As" dialog box for a PowerPoint presentation titled "HCI CLASS PPT". The file name is set to "HCI UNIT 4".
- Second Window:** A Microsoft Word document titled "closing of Dependent windows". The content includes text about network sharing and opening dependent windows.
- Third Window:** The "Network and Sharing Center" control panel page.
- Fourth Window:** The "Internet Protocol Version 4 (TCP/IPv4) Properties" dialog box, specifically the "IP Settings" tab.
- Fifth Window:** A "Control Panel Items" window showing network-related options.

The taskbar at the bottom displays icons for File Explorer, Microsoft Edge, and File Explorer again, indicating they are running in the background or are pinned to the taskbar.

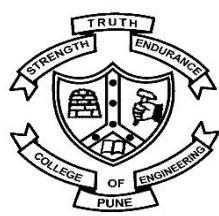


Window Design

Window Design

Coordinating Multiple Windows

Image Browsing



Design of Image Browsing

Image Browsing

Image generation

Open-ended exploration

Diagnostics

Navigation

Monitoring

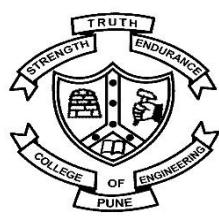


Image Generation



Adobe Photoshop CC



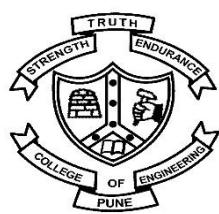
Picasa™



fotor®



AUTODESK®
PIXLR®



Open-ended exploration

- Browse to gain an understanding of the map or image.

https://www.google.co.in/maps/place/India/@20.0465094,64.3977514,4z/data=!3m1!4b1!4m5!3m4!1s0x30635ff06b92b791

Search

Sign in

India

Directions

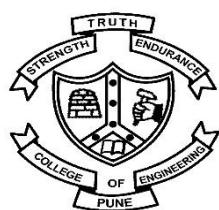
SAVE NEARBY SEND TO YOUR PHONE SHARE

Photos

Quick facts

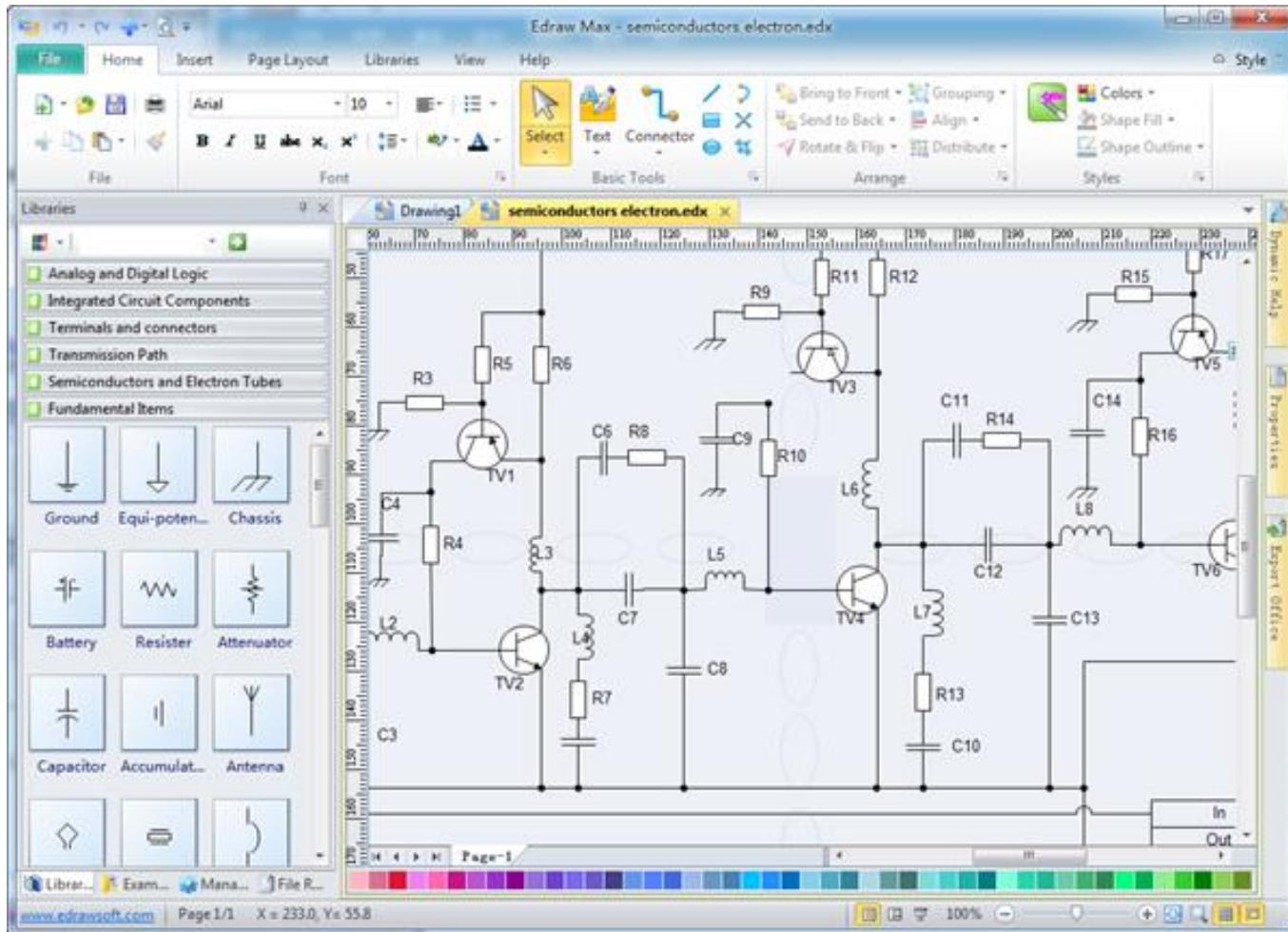
India is a vast South Asian country with diverse terrain – from Himalayan peaks to Indian Ocean coastline – and history reaching back 5 millennia. In the north, Mughal Empire landmarks include Delhi's Red Fort complex and massive

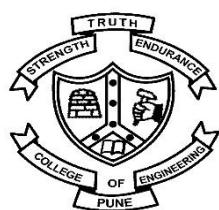
Map data ©2017 Google, ORION-ME, ZENRIN India Terms Send feedback 1000 km



Diagnostics

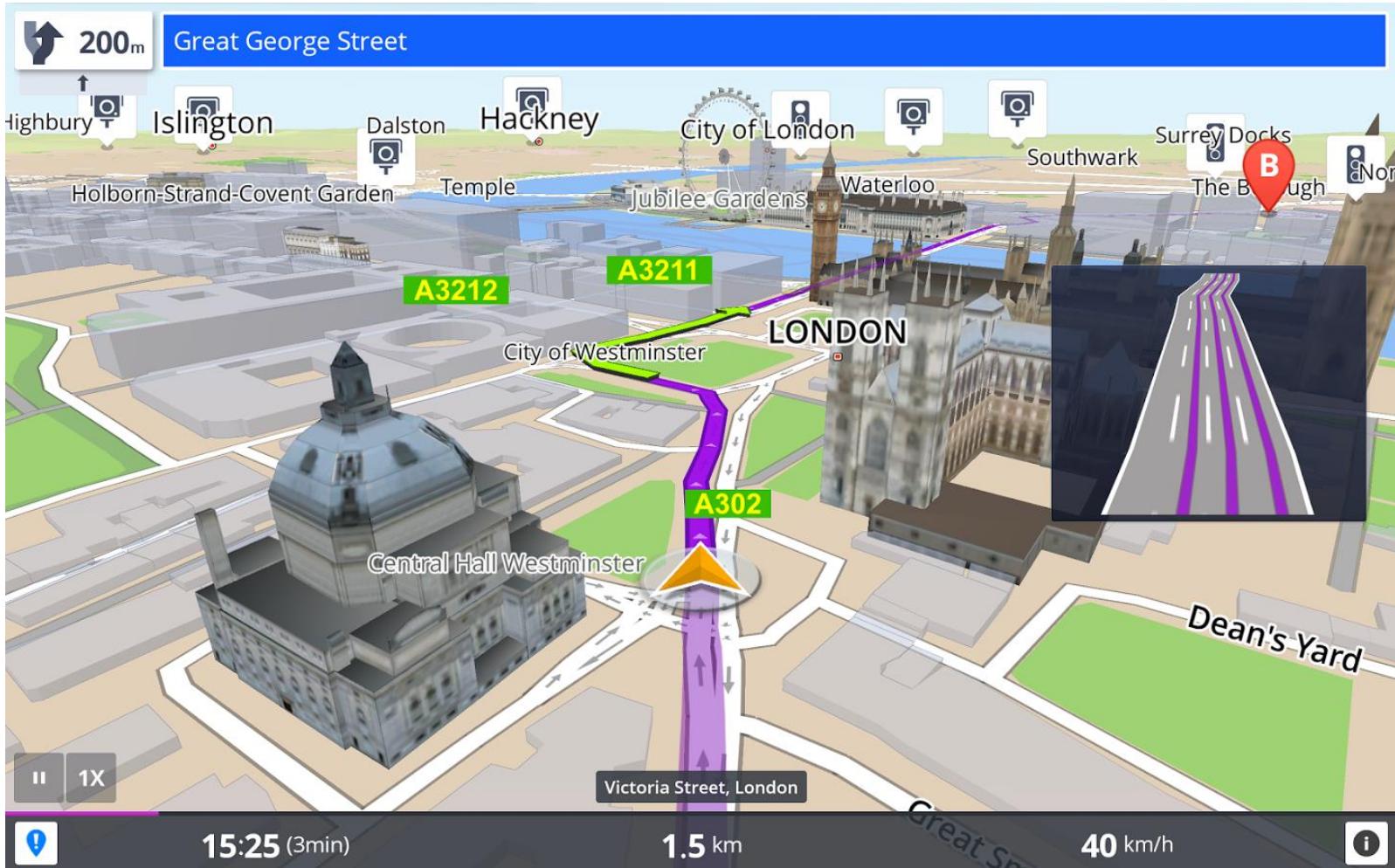
- Scan for flaws in an entire circuit diagram, medical image, or newspaper layout.

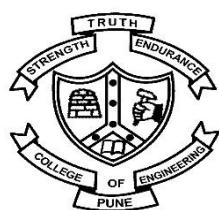




Navigation

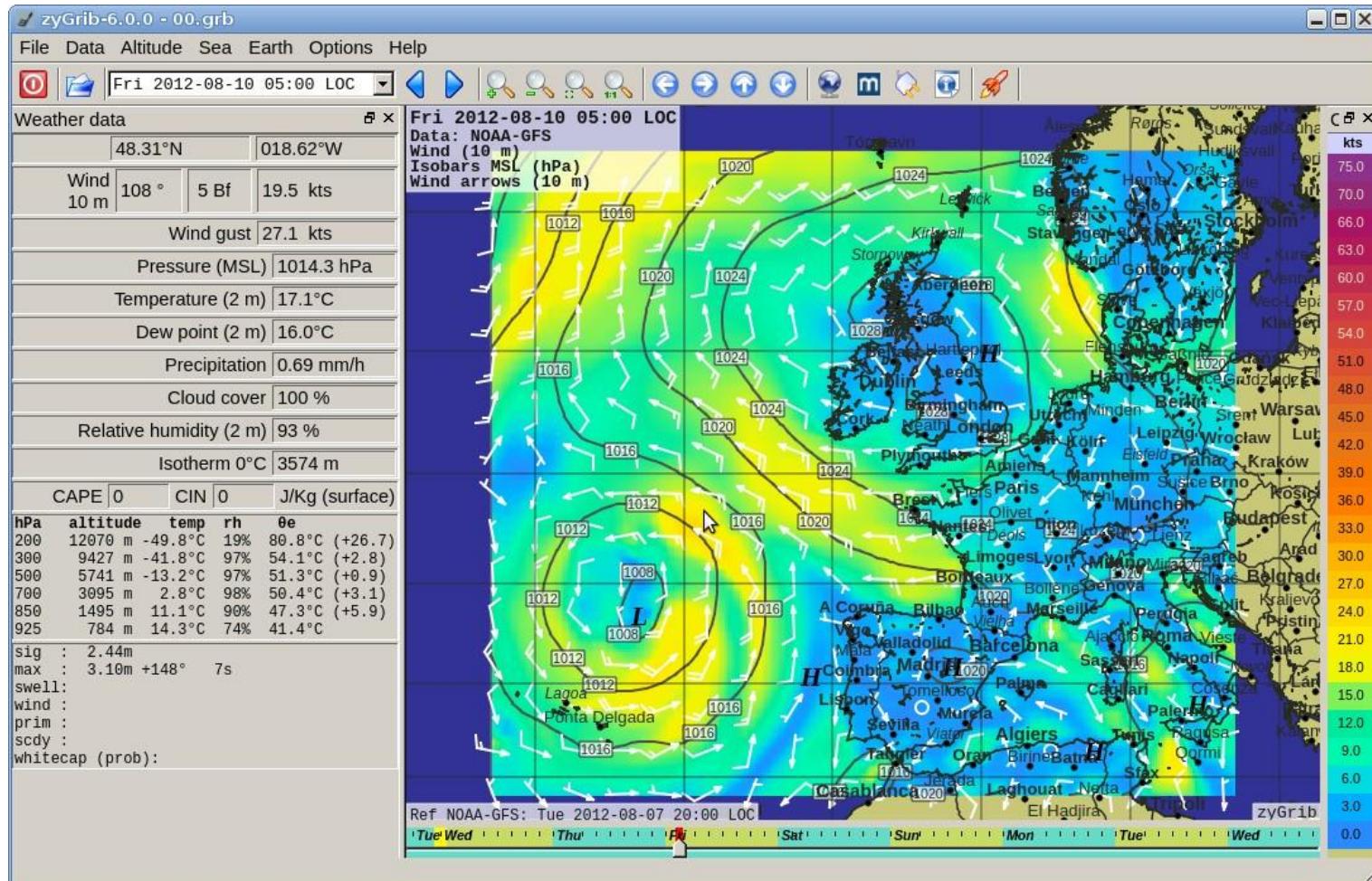
- Have knowledge of the overview, but need to pursue details along a highway or view.

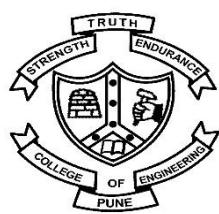




Monitoring

- Watch the overview and, when a problem occurs. zoom in on details.





Detail + Context

Overview in one window (context), detail in another (focus)

Field of view box in the overview

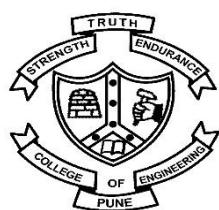


Image Browsing

https://www.google.co.in/maps/place/India/@20.0465094,64.3977514,4z/data=!3m1!4b1!4m5!3m4!1s0x30635ff06b92b791

Search

Sign in

India

Directions

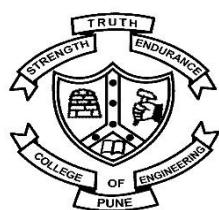
SAVE NEARBY SEND TO YOUR PHONE SHARE

Photos

Quick facts

India is a vast South Asian country with diverse terrain – from Himalayan peaks to Indian Ocean coastline – and history reaching back 5 millennia. In the north, Mughal Empire landmarks include Delhi's Red Fort complex and massive

Map data ©2017 Google, ORION-ME, ZENRIN India Terms Send feedback 1000 km



Color

Color is a key component in style

Color can

Soothe or strike the eye

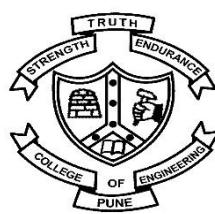
Add **accents** to an uninteresting display

Facilitate subtle discriminations in complex displays

Emphasize the logical organization of information

Draw attention to **warnings**

Evoke emotional reactions of **joy**, **excitement**, **fear**, or **anger**



Color

Guideline

Use color conservatively

Limit the number of colors

Recognize the power of color as a coding technique

Color coding should support the task

Color coding should appear with minimal user effort

Color coding should be under user control

Design for monochrome first

Consider the needs of color-deficient users

Color can help in formatting

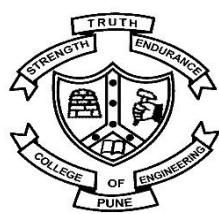
Be consistent in color coding

Be alert to common expectations about color codes

Be alert to problems with color pairings

Use color changes to indicate status changes

Use color in graphic displays for greater information density



UNIT 4

Interaction Devices

1

Keyboards and Keypads

Pointing Devices

Printers

Displays-Small and Large

Speech and Auditory Interfaces

Balancing Function and Fashion

2

Error Messages

Display Design

Window Design

Collaboration

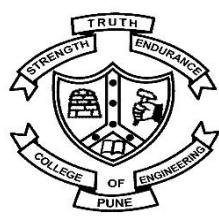
3

Goals of Collaboration

Asynchronous Distributed Interfaces

Synchronous Distributed Interfaces

Face-to-Face Interfaces

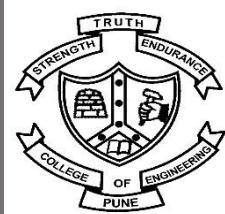


Collaboration

Collaboration

Collaborative Software
Application

Collaborative Interface



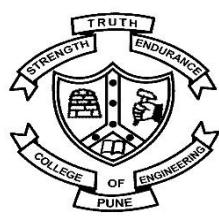
Collaboration ?

So what exactly does **collaborate** mean?

The Oxford dictionary defines it as: "**Work jointly**"

This definition is recursive (uses the synonym, "work jointly") and subject to interpretation

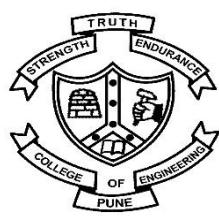
A computer application that allows its users to collaborate with each other.



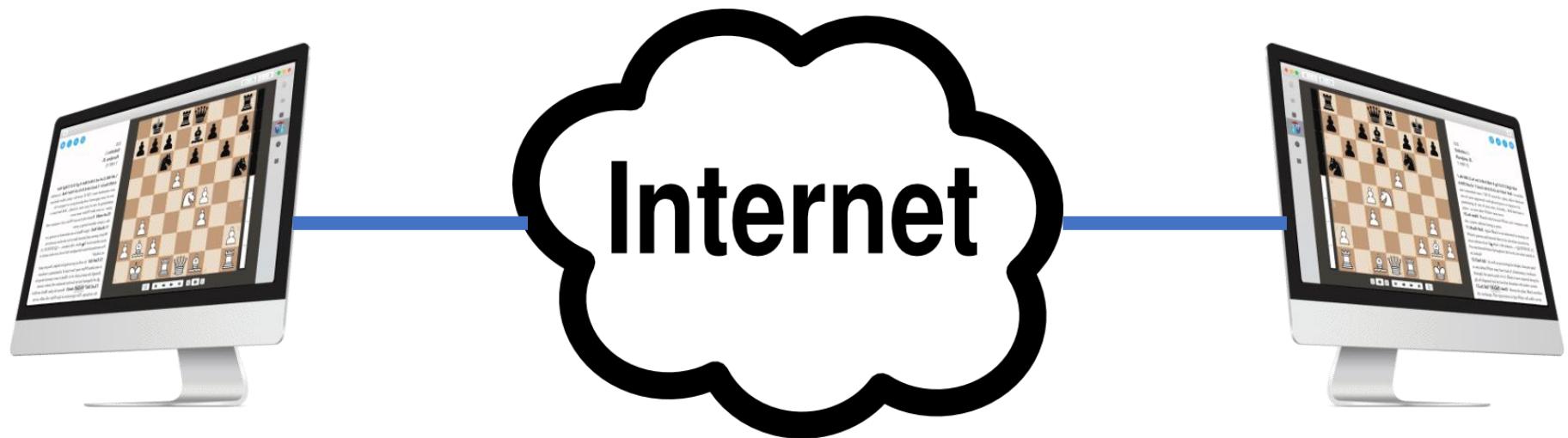
Chess Board

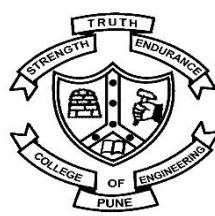


- Both players are working, they are doing it together
- Transcript of the game may (seem to them) to be an artistic production



Online Chess

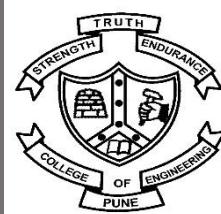




Online Chess Board Environment

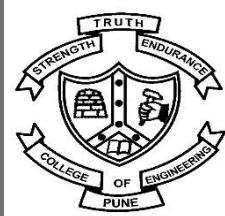


- Both the user working on same environment
- Is it Traditional multiuser applications ?



Collaborative Application

- Nature of collaborative applications is differ from traditional multiuser applications such as database applications
- **Collaborative applications :** defines as “Information technology used to help people work together more effectively,” **Groupware**
- **Groupware :**
 - **Groupware** makes the user aware that he is part of the group,
 - **Multiuser applications** hide and protect users from each other.”

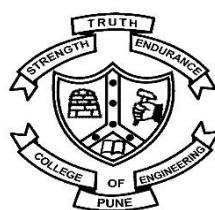


Groupware

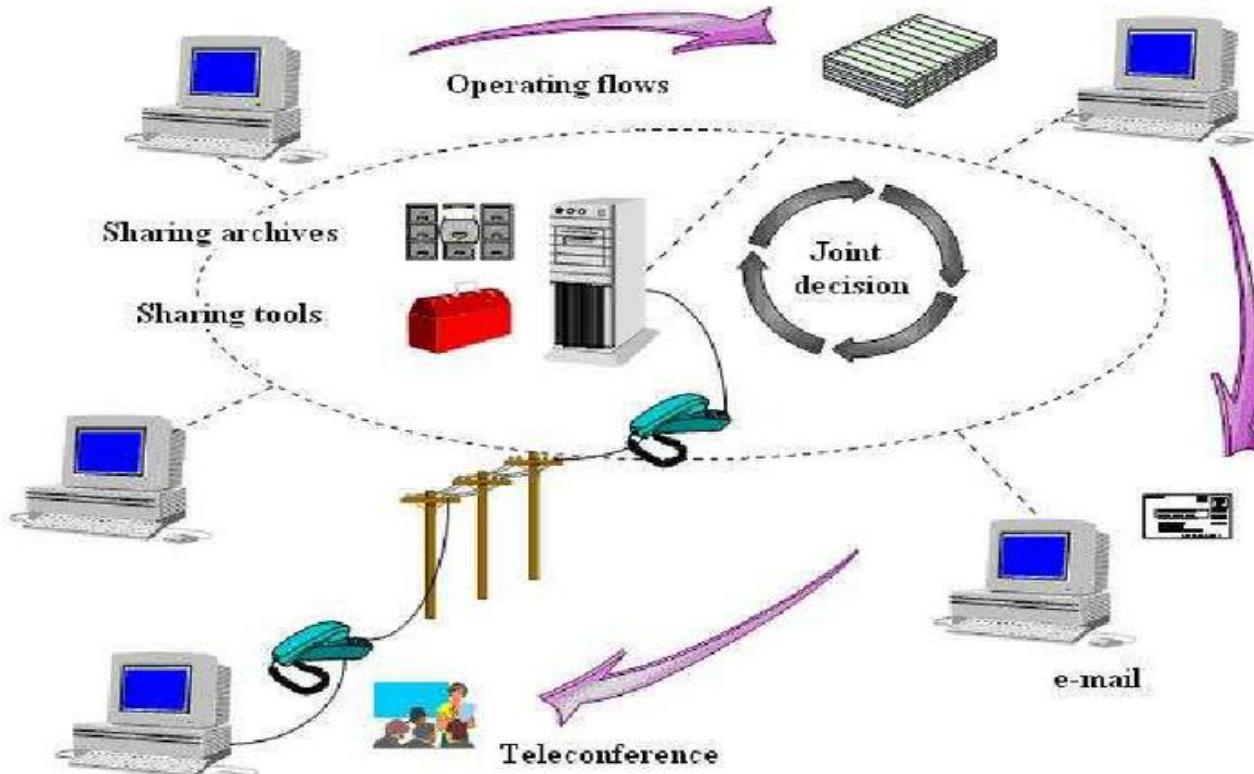
Groupware is not simply software

Software and hardware for shared interactive environments

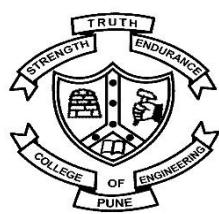
Groupware are computer-based systems that supports groups of people engaged in a common task (or goal) and that provide an interface to a shared environment



GroupWare



- **Communication** : Information
- **Collaboration** : Interface
- **Coordination** : Functions



Collaborative Applications



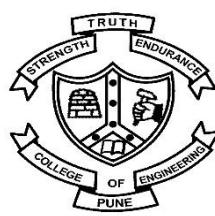
Input

- Any event (e.g. keyboard, pointer, gesture, speech) generated by a user that is interpreted by the application

output

- Any event (e.g. screen update, audio output) generated by the application that is perceptible to a user.





Collaborative Applications

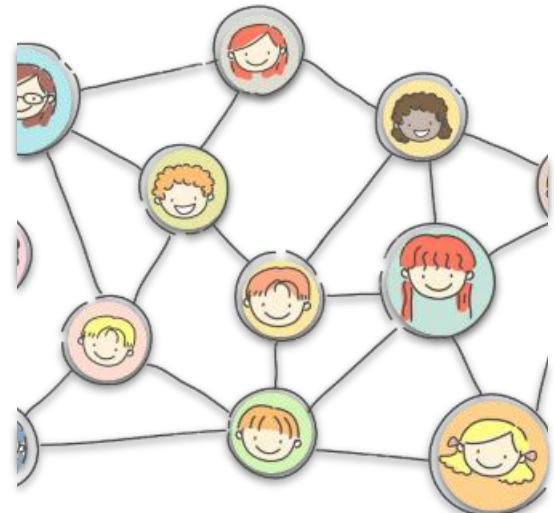


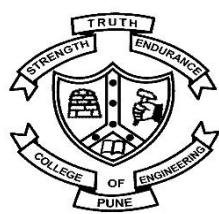
Interacts with multiple users,

- Receives input from multiple users and creates output for multiple users

Links these users

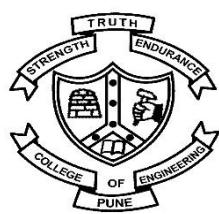
- Allows some input of some user to influence some output created for some other user





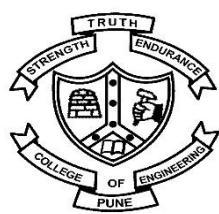
Collaboration Application





Collaborative Interface

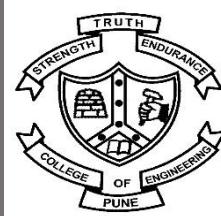




Collaborative Interface

Google docs





GroupWare Matrix

Same Place

Same Time

Face to Face Interaction
(classrooms, meeting rooms)

Different Time

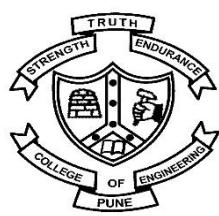
Asynchronous Interaction
(Large Public Display, project scheduling, coordination tools)

GroupWare
Matrix

Different Place

Synchronous Distributed
(shared editors, video conferencing, instant messaging)

Asynchronous Distributed
(email, blogs, conferences, wiki, group calendar)



GroupWare Matrix

Same Place



Different Place

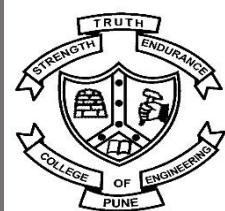


Group

matrix

A
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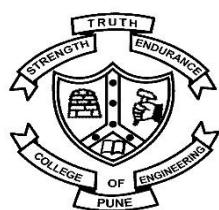
distributed
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lar)



Face-to-Face Interfaces: Same place, same time

- Innovative approaches to work and learning include:
 - Shared display from lecturer workstation
 - Audience response units
 - Text-submission workstations
 - Voting, and ranking.
 - Shared workspace
 - Group activities
 - E.g.- Liveboard, SMART Board
 - Public spaces facilitate sharing
 - Notification systems



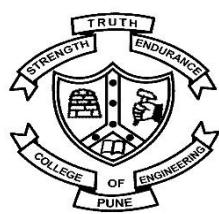


Face-to-face interfaces

- Shared workspace
- Group activities
- E.g.- Liveboard, SMART Board
- Public spaces facilitate sharing
- Sharing photos is very popular
- Notification systems

The screenshot shows the SMART Notebook SE software interface. The main window displays a presentation slide titled "My Book Report". On the slide, there is text: "Title: A Modern Day Goldilocks and the Three Bears", "Author: Kaitlyn", and "Type of Book: Fiction". Below the text are cartoon illustrations of three bears (two adults and one cub) and a girl named Goldilocks. The left sidebar shows a file tree under the folder "Goldilocks", including "SMART Learning Marketplace", "My Content", "Online Essentials for Educators", "Themes", "Gallery Sampler", and "Search Results for Goldilocks". There are also preview thumbnails for "bear - baby", "bear - mama", "bear - papa", and "Goldilocks". At the bottom, there are links for "Notebook Files and Pages (3)" and "Auto Hide".

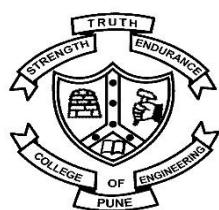




Face-to-face interfaces

■ Electronic classrooms

- Active individual learning experiences
- Run business simulations to increase product quality
- Perform psychological statistical analyses
- Do landscaping with computer-assisted design and graphics packages
- Compose computer programs and search the Internet
- Small teams and large teams
- Changes teaching style



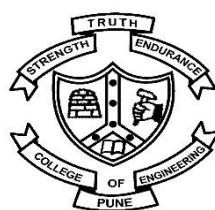
Synchronous Distributed Interfaces: Different place, same time

- Synchronous distributed applications
 - Group editing
 - Shared screens for customer assistance
 - Give demonstrations simultaneously at multiple sites
 - Allow sharing of information for various applications
 - Interactive games



Google docs

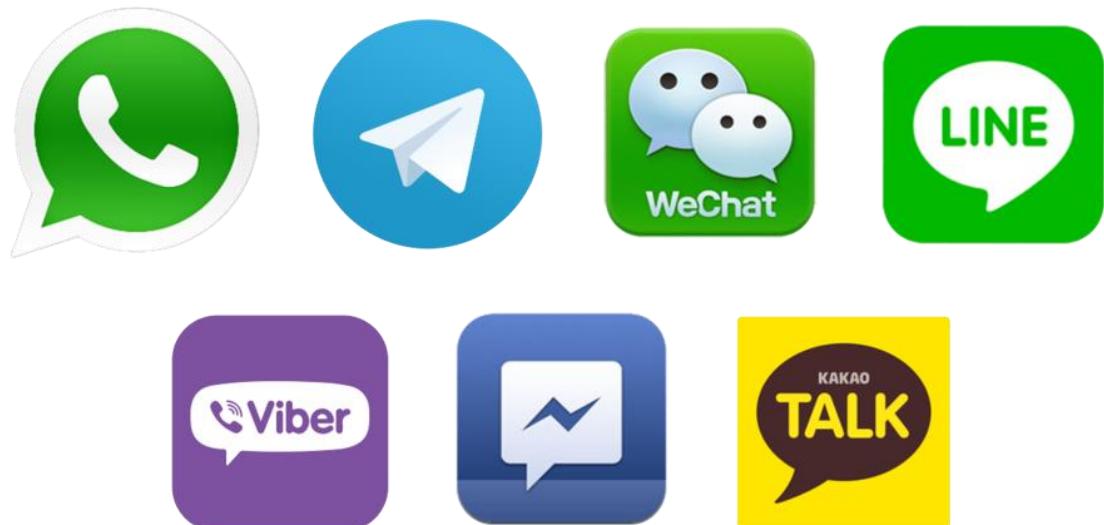


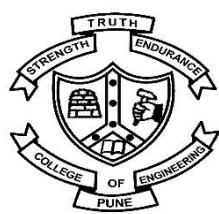


Synchronous Distributed Interfaces

- Chat, instant messaging, and texting

- Whatsapp
- Facebook Messenger
- Instant Messaging
- Twitter
- Texting and cell phones

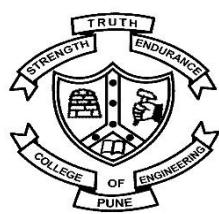




Synchronous Distributed Interfaces

- Audio and video conferencing

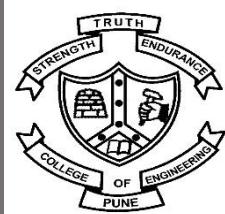




Synchronous Distributed Interfaces



Students in an online classroom. Activity is monitored by color: speech in yellow, hand motion in red, body motion in green. Under each student is a timeline of their individual activity and at the bottom is an activity picture (using the colors) of the class (Chen)

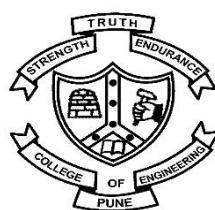


Asynchronous Interaction : Same Place, Different Time

- Large Public Display

प्रातः ब्रह्मका	गाडी का नाम	प्र.समय	फे.क.
16339	मुंबई नागरकोर्हा०१० एक्स.	12.05	-
17031	मुंबई - हेवडाबाद एक्स.	12.45	-
12071	ओरंगाबाद जनशताव्दी एक्स.	13.50	-
11041	मुंबई - चैनी एक्स.	14.00	-
11009	छ.शि.ट. पुणी सिंहगढ़ एक्स.	14.30	-

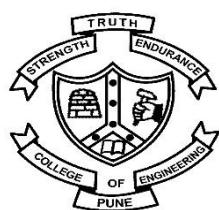
प्रस्थान / DEPARTURE



Asynchronous Distributed Interfaces: Different place, different time

Electronic mail:

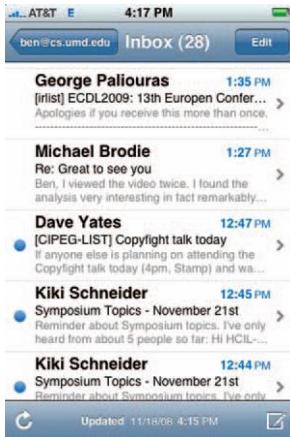
- Tools
 - Filtering
 - Archiving
 - Mailing lists
 - Discussion groups
- Includes structured objects
 - Graphics
 - Sounds, Videos
 - Animations
 - Web pointers



Asynchronous Distributed Interfaces

Electronic mail:

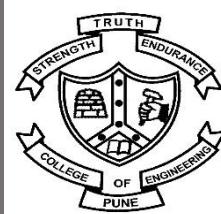
- Email on mobile devices
- Web services with E-mail



E-mail message on an iPhone

Date	From	Subject
8:22 am	DunhillVacationNews	Play in the Ocean or Play in Vegas, Free Trips & Discounted Luxury
5:00 am	Spirit Airlines	Spirit Airlines - \$48 Off for 48 Hours - 140 Off for 48 Hours Sale
Nov 14	Current Catalog	FREE shipping & BLOWOUT prices on kids' crafts, Valued Customer!
Nov 13	BLOCKBUSTER	KUNG FU PANDA & SISTERHOOD 2 are Now Available
Nov 13	American Airlines	AAAdvantage eSummary for Nov 08 - Having trouble viewing this email? Click Here. Our email addresses are c...
Nov 13	DunhillVacationNews	Feel Santa Between Your Toes This Winter
Nov 13	Spirit Airlines	Exercises That Are Easy on Your Joints
Nov 13	Current Catalog	Week of November 9 In This Issue: + RA Doubles Heart Attack Risk
Nov 13	Lufthansa	Accept our Thanksgiving Challenge! - Consumers Union Join our Local Food Challenge!
Nov 13	blockbusteronline	Your chance to win a First Class trip to Europe with Lufthansa
Nov 13	Target.com	Your e-coupon is now available! - Blockbuster Hello Maxine, Account Number: 2600503 We wanted to let you...
Nov 13	BestFares.com	Gift it up: Free shipping, plus great gifts at sparkling prices.
Nov 13	Icelandair - North Ameri...	Final Hours \$78 RT to \$218 Roundtrip Coast to Coast, New Cheap Hawaii Airfares Thru Mar...
Nov 12	WebMD	Lucky Fares - Winter Budget Getaway and More
Nov 12	Current Catalog	Stressed-Out Over Money Problems?
Nov 12	DunhillVacationNews	This Week's Hottest Travel Deals
Nov 12	BestFares.com	Exclusive sneak peek plus FREE shipping, Valued Customer!
Nov 12	blockbusteronline	This Week's Hottest Travel Deals

Google's web-based email (Gmail)

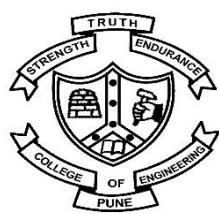


Asynchronous Distributed Interfaces

Newsgroups, list servers, discussion boards, conferences, social media participation web sites, blogs, and wikis

Newsgroup

- Focused electronic discussions by group of people
- USENET newsgroups
 - Each group dedicated (more or less) to one topic
 - Like ordered posting on bulletin board
 - Users read as many previous notes and related comments as they wish
 - Open to all

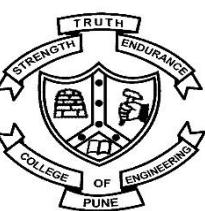


Asynchronous distributed interfaces

Online magazines and newsletters

Web-logs/blogs and wikis

Discussion Board



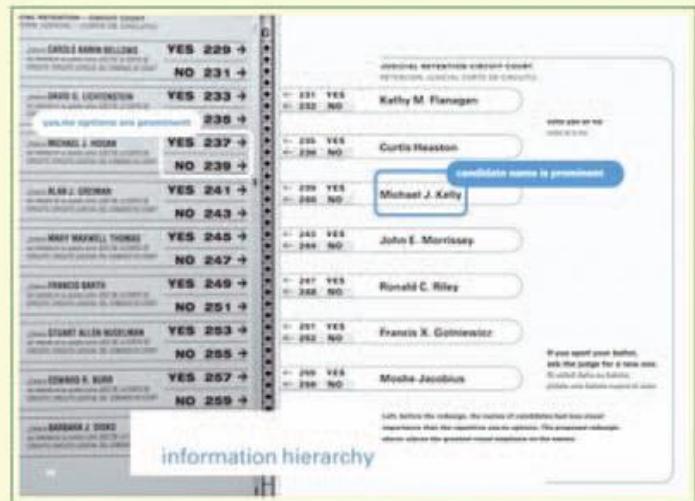
Asynchronous distributed interfaces

HCI User Advocate

Software makers and users often have conflicting goals - with the makers winning. Yet they all too often shoot themselves in the foot by distrusting the users - their customers. Or worse, maltreating them. It is time to get angry about bad and malicious software design. This Blog calls software designers on the carpet - giving them credit and shame where they deserve it.

TUESDAY, NOVEMBER 4

Design for Democracy



For election day, I want to point to some fantastic work exploring how to improve the design of voting ballots and other material related to elections. Marcia Lausen's book, "[Design for Democracy: Ballot + Election Design](#)", part of the related AIGA Design for Democracy project does the job. She presents case studies, showing problematic decisions and very clear and simple redesigns that addresses their

Me

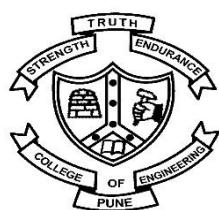
Ben Bederson

Associate Professor of Computer Science @ Univ. of Maryland and past Director of [Human-Computer Interaction Lab](#) (2000-2006)

Co-founder & Chief Scientist @ [Zumobi](#) - Zoomable Interfaces for Mobile

Previous Posts

- [Why I returned my Apple TV](#)
- [PPTPlex - Zoomable presentations not quite yet for...](#)
- [The wonder of single tasking](#)
- [AT&T still nasty about service plans](#)
- [A Tale of 2 Dead Disks - Why Macs Make People Happ...](#)
- [Google owns your name with Picasa name tagging](#)



Asynchronous distributed interfaces

The image displays two screenshots of the Wikipedia website. The left screenshot shows the main homepage with links to various language versions (English, Deutsch, Français, Polski, Русский, 日本語, Español, Italiano, Português, Nederlands) and a large globe icon. The right screenshot shows a specific article page for "Social media", featuring a sidebar with navigation links like "Main page", "Contents", and "Interaction", and a central content area with a red "Donate" button.

WIKIPEDIA

English
The Free Encyclopedia
2 626 000+ articles

Deutsch
Die freie Enzyklopädie
827 000+ Artikel

Français
L'encyclopédie libre
727 000+ articles

Polski
Wolna encyklopedia
563 000+ artykuły

Русский
Свободная энциклопедия
331 000+ статей

日本語
フリー百科事典
537 000+ 回集

Español
La encyclopédia libre
417 000+ artículos

Italiano
L'encyclopédia libera
516 000+ voci

Português
A encyclopédia livre
440 000+ artigos

Nederlands
De vrije encyclopedie
406 000+ artikelen

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100 000+

Català · Česky · Deutsch · English · Español · Esperanto · Français · Italiano · Magyar · Nederlands · 日本語 · Norsk (bokmål) · Polski · Português · Русский · Română · Slovenčina · Suomi · Svenska · Türkçe · Українська · Volapük · 中文

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WIKIPEDIA
The Free Encyclopedia

navigation

- Main page
- Contents
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interaction

- About Wikipedia
- Community portal
- Recent changes
- Contact Wikipedia
- Donate to Wikipedia
- Help

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link
- Cite this page

languages

- Deutsch
- Français

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Social media

From Wikipedia, the free encyclopedia

This article needs additional citations for verification.
Please help improve this article by adding reliable references.
Uncited material may be challenged and removed. (August 2008)

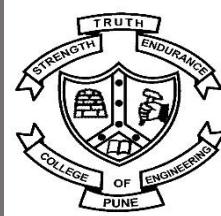
Social media are primarily Internet- and mobile-based tools for sharing and discussing information among human beings.^{[1][2]} The term most often refers to activities that integrate technology, telecommunications and social interaction, and the construction of words, pictures, videos and audio. This interaction, and the manner in which information is presented, depends on the varied perspectives and "building" of shared meaning among communities, as people share their stories and experiences.

Contents [show]

Distinction from industrial media

Social media are distinct from industrial media, such as newspapers, television, and film. While social media are relatively cheap tools that enable anyone (even private individuals) to publish or access information, industrial media are relatively expensive tools that generally require significant financial capital to publish information (which often limits their use to commercial purposes)^[3]. Examples of industrial media include a printing press or a government-granted spectrum license.

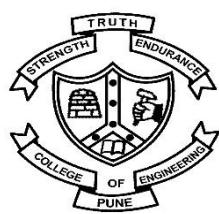
"Industrial media" are commonly referred to as "traditional", "broadcast" or "mass" media.^[4]



Synchronous distributed interfaces

- **Audio and video conferencing (cont.)**

- Whether audio or video conferencing is more appealing than chat, IM, and texting, or **more effective than asynchronous** text, depends on the goals and the task environment
- *The Polycom, Sony, Tandberg, and VTEL* video-conferencing platforms provide increasingly high-quality services on telephone lines, the Internet, local area networks, and leased lines



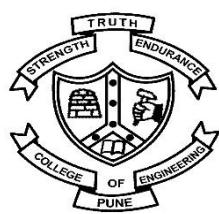
Synchronous distributed interfaces

■ Audio and video conferencing

■ Problems ?

- slow response times for entering and leaving session
- distracting background audio
- difficulty in determining who is speaking
- inadequate lighting
- difficulty in making eye contact
- small image size
- potential invasion of privacy
- need for convenient turn taking
- need for document sharing





UNIT 4

Interaction Devices

1

Keyboards and Keypads

Pointing Devices

Printers

Displays-Small and Large

Speech and Auditory Interfaces

Balancing Function and Fashion

2

Error Messages

Display Design

Window Design

Collaboration

3

Goals of Collaboration

Asynchronous Distributed Interfaces

Synchronous Distributed Interfaces

Face-to-Face Interfaces