



# *UI Year 2020*



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Location:  
San Jose McEnery Convention Center  
150 West San Carlos St.  
San Jose, CA 95113

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# *Future User Interfaces*

- How much longer will we be WIMPs?
  - Windows, Icons, Menus and Pointer
- The interface as you know it is over
- Research labs have been busy for a decade
- Defense apps not transitioning to commercial
- Industry is a decade behind labs
- Opportunity for FOSS to leap ahead

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## *State of the Art in UI*

- Keyboard
- Mouse
- NIC
- Game port
- MIDI
- Microphone (why can't we record birds right?)
- Speaker
- Touchscreen/tablets
- Webcam, Logitech tracking cam
- Wii
- iPhone

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## *What's Next in UI*

- Research labs and Hollywood showing the way
- Gesture
- Speech
- Conversational AI
- Image AI
- HUD, 3D
- New io devices

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## *Chani, Our Poster Child*

- The future is already here
- Multi-device, multi-display, multi-conversation
- Chani holding 3½ simultaneous conversations
  - In hallway at FOSScamp in conversation with two people, while simultaneously...
  - One audio conversation on phone..
  - Me observing and listening
  - We're a little confused who Chani is talking to, she has no trouble multi-tasking

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## *Gesture Interfaces*

- Image tracking
- Mo-cap
- Image stabilization
- Input devices
  - Video cameras
  - Accelerometers
  - Magnets, sensor grids

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## Speech Interfaces

- TTS: transcription
  - Cheap microphones
  - Noisy environments, GIGO
- STT: voice synthesis
  - Stephen Hawking
- Speech state of the art is broken
  - CMU HMN neural net architecture flawed
  - Need to model on human hearing (like MP3)
  - Need prosodics, detect words, punctuation

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## Relevant AI

- Converstational, as in the film *Iron Man*, 2001...
- Eliza is amazing, yet dumb
- Eliza + Google = much smarter
- Image AI, as in the film *Iron Man*
  - Image tracking is first step
  - Image identification
- Gisting, infer summary or question
  - Google does by spell-checking queries

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## *HUD and 3D*

- HUD and 3D in movies
  - *Iron Man*
  - *Quantum of Solace*
- 3D projection
  - Autoglyph red/cyan glasses
  - Polarizing glasses
  - Shutter glasses
  - Volumetric projection, no glasses
- HUD
  - Already using heads-up multi-display with simultaneous iPhone and laptop displays
- Projector mobile phones coming (Samsung) 9/14



## *New UI devices*

- Projector mobile phones
  - Seeing at tradeshow now
- Logitech tracking webcam
- Force feedback game controls
- Touchpad gesture control
- Smart pen



## *Big Ideas Can Work*

- OLPC
- iPhone
- Mouse

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## *Opposing Arguments*

- Can't be done, too hard
  - That's what they said about Linux
- Not worth doing, love WIMP UI
  - More fun to do UI Y2020, can look beyond the next gadget for KDE/GNOME desktop
- We'll all have iPhones instead of computers
  - So do it in Android
- If it's worth doing, let commercial software do it first, then we'll build open source knock-offs
  - Open source can out-innovate closed when we try (e.g., ZFS)

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## *What Could We Do Now?*

- Using existing hardware
  - Webcam gesture tracking
    - Wave hand and window moves on desktop like *Quantum of Solace*
    - Virtual keyboard: like iTech
  - Speaker: TTS
  - Microphone: STT
- Conversational AI
  - Integrate Eliza with Google
- Image AI
  - Could use university research
- Gisting

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**THANK YOU!**

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