



# ICSI 30<sup>th</sup> Anniversary

## October 5, 2018

Morgan

Former ICSI Director  
Now Happily Retired

# A Personal Recollection

- **30 years in 12 minutes**
- The Realization Group
- The Speech Group
- Being the Director

- **The “Realization of Massively Parallel Systems”**
  - **Neural networks**
- **Hardware, software, algorithms**
- **Focus application: speech recognition**
  - **Eventually, more speech research than systems**
- **Staff, students, visitors**

# Three wild and crazy guys (much younger)



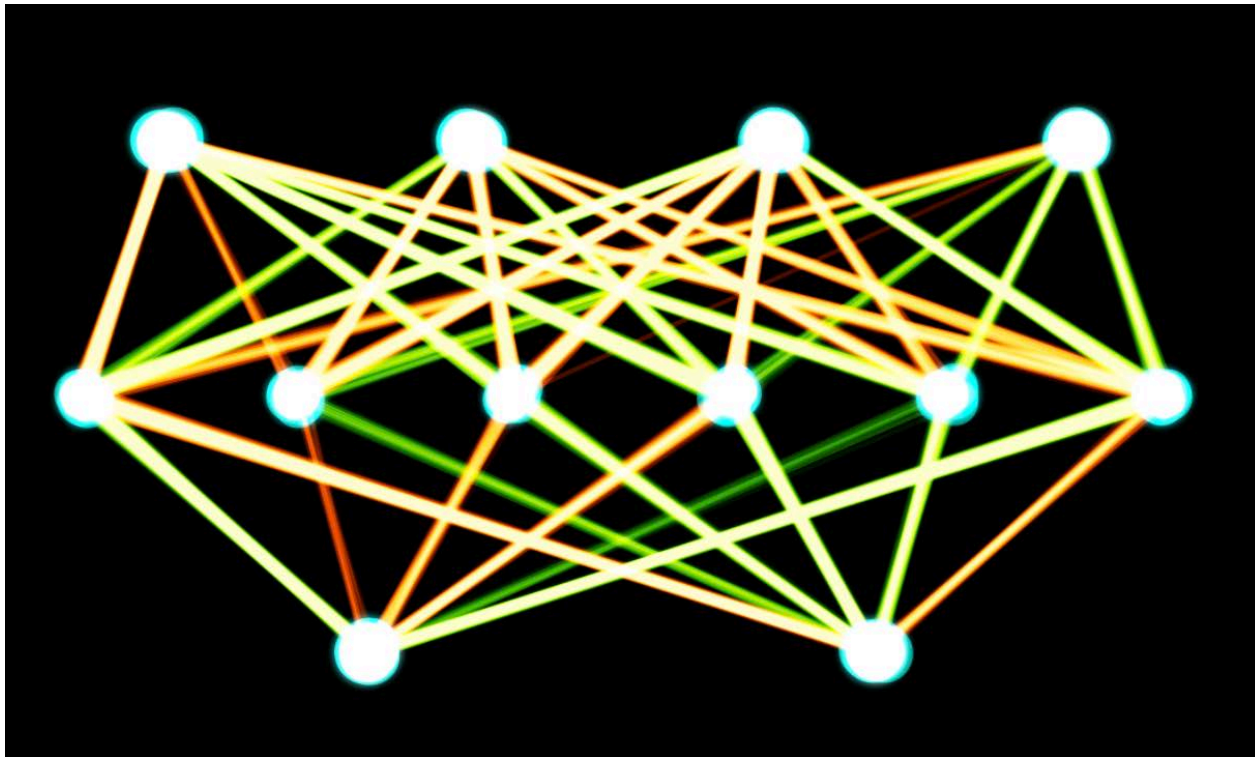
**Morgan**

**Hermansky**

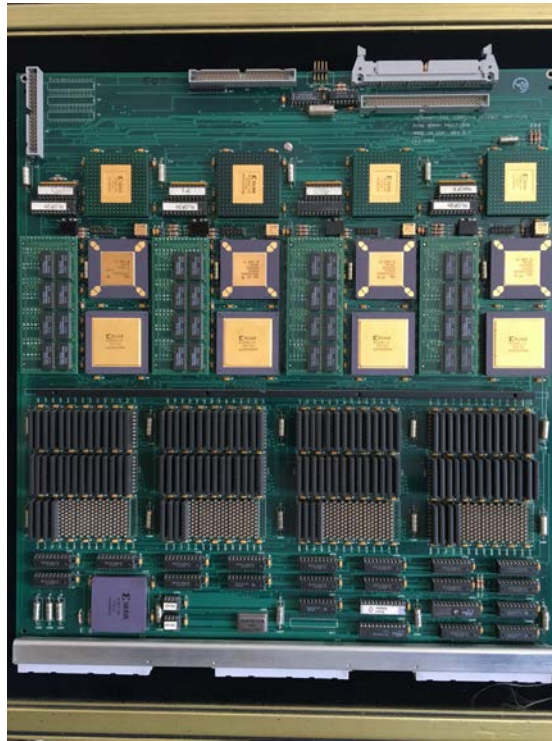
**Bourlard**

- **Bourlard: let's use neural networks to get probabilities for statistical sequence models!**
- **Hermansky: let's use perceptually relevant features to feed into these things**
- **Morgan: how about if we build systems that work?**

- **Hybrid ANN-HMM systems are now the basis of nearly all speech recognition systems**

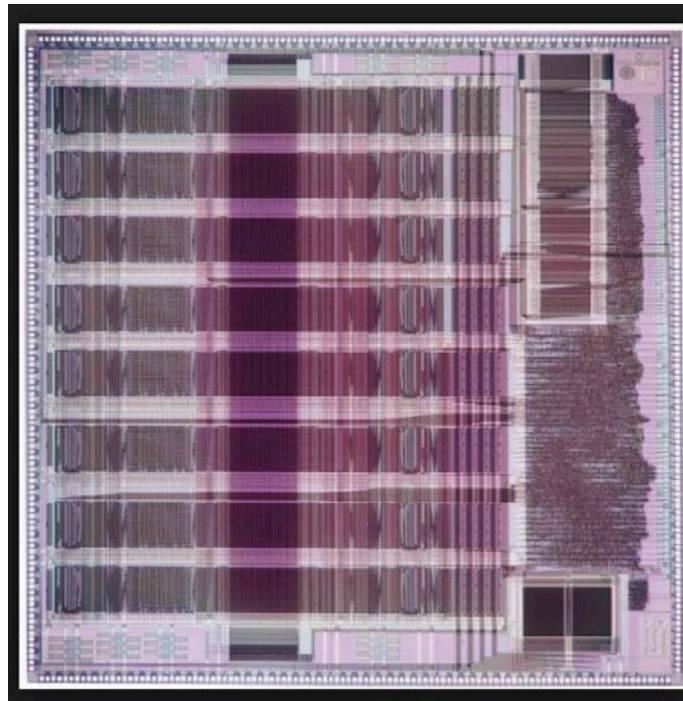


- **The Ring Array Processor (RAP)**



- **Key Designer: Jim Beck (also designed later boards)**

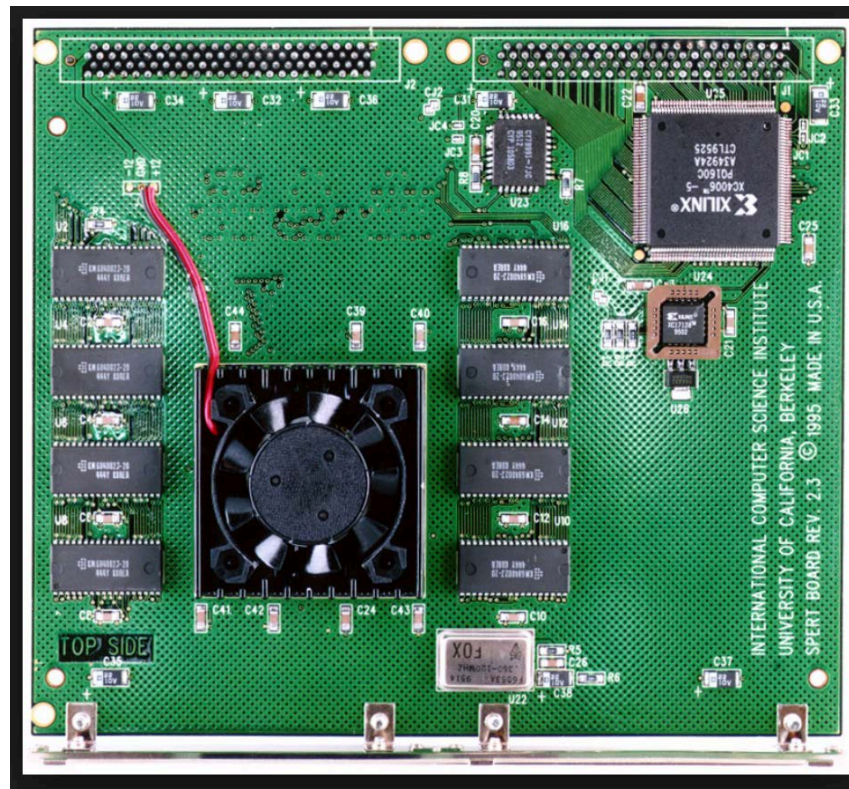
- **The Torrent (1<sup>st</sup> single chip vector microprocessor)**



- **Key designer: Krste Asanovic**



- **The Spert Board (Torrent + FPGA)**



- **Also used in multiples for larger systems**

**Key Designers: Jim Beck (HW), David Johnson (SW)**

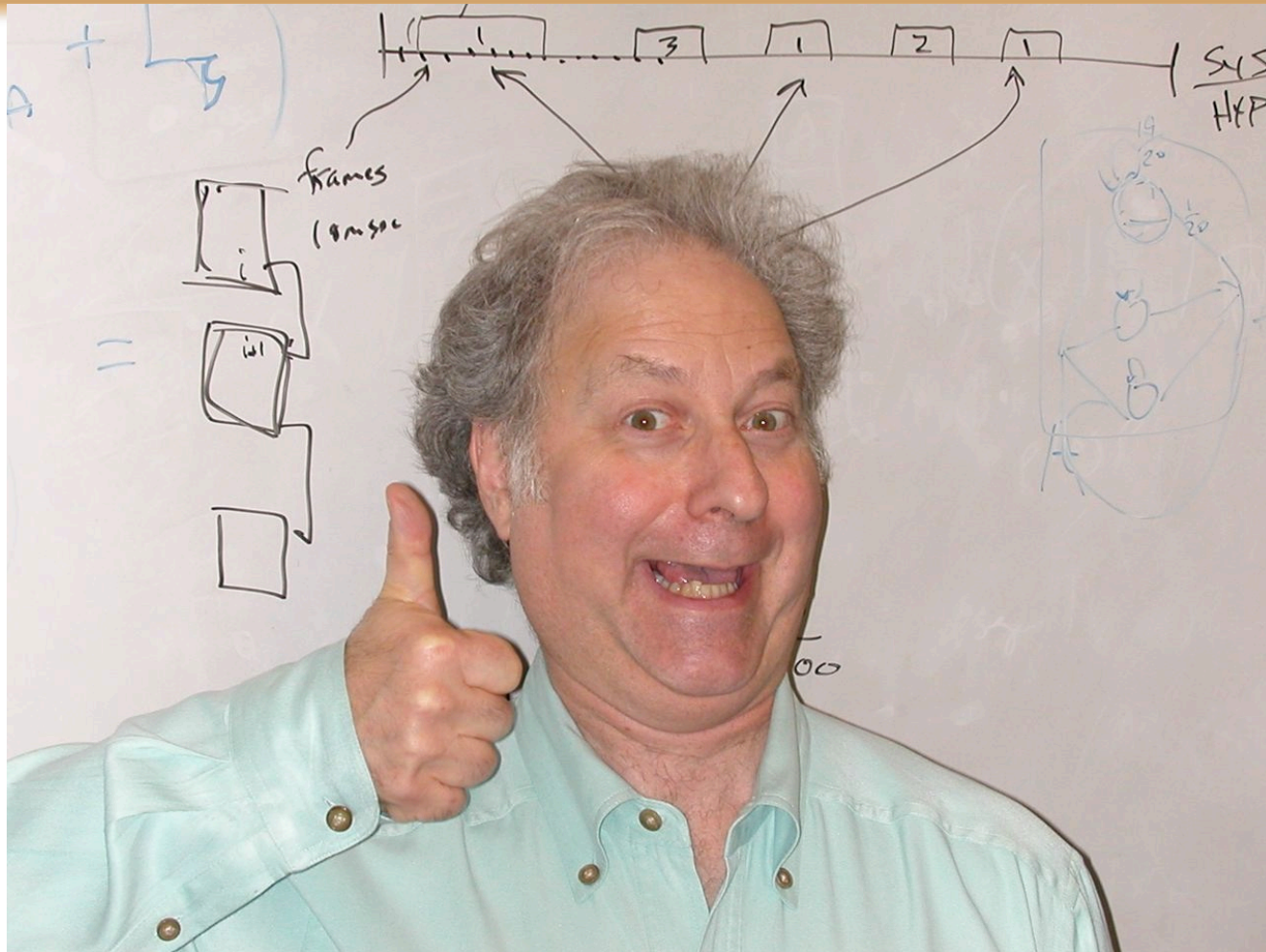
## But here's what was really different

- **We actually used the systems we built!**
  - **Not typical for academic system projects**
- **We used the systems to further speech research**
- **We distributed the systems to partners in Europe**
- **Not just common tasks, data, and software:  
common fast hardware!**
- **Long before widely available common accelerators  
(GPU)**

- **One of the earliest spoken dialog system**
  - **Berkeley Restaurant Project (BERP)**
- **Task, algorithms, and data for speech in meetings**
  - **Current incarnation: Berkeley startup “Remeeting” –**
    - **group alums Arlo Faria and Adam Janin**
- **Measuring speaking rate, and analyzing the effects**
- **Multi-stream speech recognition**
  - **With key European partners**
- **10 PhD students graduated in this first decade**
  - **18 more later on**

- **Speaker diarization (who spoke when)**
- **Speaker recognition**
- **Speech processing inspired by cortical function**
- **Studying limitations of modern speech recognition**

# Becoming Director in 1999: How Hard Could This Be?



Oy!



**After looking at the financials**

## An era had ended

- **Major international funding for 10 years**
- **Some continuation at a lower level**
- **Initial estimate when I became Director in April 1999: we had 2-3 months left**
- **Scrambling to handle the immediate crisis, but recovery was around the corner**

# Internet research to the rescue!





- **AT&T Center for Internet Research at ICSI**
- **Led by Scott Shenker (today's last speaker)**
- **Many thanks to Dave Nagel and Hamid Ahmadi**
- **Possibly was the best Internet research group**
- **Later, many peer-reviewed Federal grants**

# The rest of my years as Director (through 2011)

- **Two primary pillars:**
  - **Internet research (including security)**
  - **Speech and language research**
- **Other efforts in vision and bioinformatics**
- **Increasingly fighting for scarce grant funds**
- **But we “persisted”**
- **Berkeley grad students, faculty partners, international friends, all made it work**

- **No time to thank so many others:**
  - **great students,**
  - **postdocs,**
  - **research staff,**
  - **administrative staff**
- **But mostly, Maria and Scott, for being my true partners during my Director years**
- **And Maria again, for taking on the daunting task of**  
**Executive Director**

- **The next session will feature both ICSI past and ICSI present research**
  - **Mike Luby (early Algorithms leader, took ideas into industry)**
  - **Krste Asanovic (ICSI grad student -> Berkeley prof and industry innovator)**
  - **Nancy Chang ICSI NLU grad student -> Google application)**
  - **Vern Paxson (ICSI security research leader, inventor of Bro -> Corelight)**
  - **Serge Egelman (ICSI leader on Usable Security and Privacy)**
  - **Vadim Shapiro (ICSI leader on Cybermanufacturing)**
  - **Scott Shenker (ICSI Chief Scientist and Visionary)**

# But first

- **A 15 minute break!**

# Break music

