2022 Winter Retreat
Thank You, Sponsors!
Platform Lab

Bill Dally
Architecture

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Networking

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Architecture, System SW
(Faculty Director)

Phil Levis
Embedded Systems

Nick McKeown
Networking

John Ousterhout
Granular Computing

Guru Parulkar
Networking
(Exec. Director)

Balaji Prabhakar
Networking

Mendel Rosenblum
Distributed Systems,
Networking

Mac Schwager
Distributed Robotics

Keith Winstein
Networking,
Granular Apps

Matei Zaharia
Big Data,
Cloud Computing

Define & demonstrate new HW/SW platforms that enable exciting new applications
Latest Results & Current Work
Highly Accurate Clock Synchronization

**CloudEx**: a fair-access financial exchange in the cloud [HotOS'21]

**On-ramp**: transient congestion control based on accurate delay measurements [NSDI'21]

**Nezha**: a fast consensus protocol based on accurate clock synchronization

**Collaborators**: Cisco, Google, Meta, Nasdaq, Well Fargo
**Systems for Machine-learning**

**ML-Exray**: an e2e framework for visibility into edge ML deployments [MLsys’22]

**RecShard**: statistics-based sharding of industry-scale embedding tables [ASPLOS’21]

**Megatron-ML**: efficient training of large-scale language models on GPU clusters [SC’21]

**ColBert**: a fast & accurate model for neural information retrieval [SIGIR’20]

**Collaborators**: Meta
Machine-learning for Systems

**SmartHarvest**: an online-learning system to harvest idle cloud resources [Eurosys’21]

**SOL**: an extensible framework for robust & efficient ML-based agents [ASPLOS’22]
Core Systems

**Homa in the Linux kernel**: 7-83x lower tail than TCP and DCTCP [ACT’21]

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**Syrup**: a framework for user-defined scheduling across the stack [SOSP’21]

**Ghost**: efficient delegation of thread scheduling to user-level code [SOSP’21]

**POP**: fast & near-optimal resource allocation at large-scale [SOSP’21]

**Fixpoint**: a FaaS framework with a content-addressable data model

**Collaborators**: Google
New Efforts

**VIVA: interactive video analytics [CIDR’22]**
End-to-end system for ad-hoc queries on massive video datasets

**Database-oriented operating system [CIDR’22, VLDB’22]**
What if all system and user data were transactional?
Collaboration with VMware, Google]
Platform Lab Graduates

Francis Chen (Tesla)
Holly Chiang (Apple)
Sandeep Chinchali (UT Austin)

**Eyal Cidon (Meta)**
Sean Choi (SCU)
Cody Coleman (Coactive)
Sadjad Fouladi (MSR)

**Luke Hsiao (Google)**
Pan Hu (Alibaba)
Yilong Geng (Clockwork)
Steve Ibanez (Intel)
Zhihao Jia (CMU)
Collen Josephson (UCSC)

Reajoon Jung (Meta)
Kevin Kiningham (Waymo)
Colin Lee (Luminary)
Shiyu Liu (Clockwork)
Huizi Mao (OmniML)
Deepak Narayanan (MSR)
Shoumik Palkar (Databricks)
Kexin Rong (Vmware → GaTech)
Feiran Wang (Google)
Riad S. Wahby (CMU)

**Neeraja Yadwakar (Vmware → UT Austin)**
Francis Yu Yan (MSR)
Zi Yin (DE Swaw)
Platform Lab Awards

Faculty

Katti & Levis: SIGMOBILE Test of Time Award
Prabhakar: IEEE Koji Kobayashi Award, SIGMETRICS Test of Time Award, SIGCOMM Test of Time Award
Winstein: SIGCOMM Rising Star Award
Zaharia: NSDI Test of Time Award, Eurosys Test of Time Award

Student awards

Usenix ATC’21 best paper award
SC’21 best paper award
IEEE Micro Architecture Top Picks
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<td>Tuesday, Feb 15</td>
<td>3.30 – 4.30</td>
<td>Serverless Computing</td>
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<td>Time-aware systems</td>
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<td>5.30 – 6.30</td>
<td>Panel: Future of cloud</td>
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<td>Wednesday, Feb 16</td>
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<td>Thursday, Feb 17</td>
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<td>Efficient communication</td>
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<td>4.00 –</td>
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Panels

**Future of cloud (Tuesday 5.30pm)**
- Keith Winstein (moderator)
- Neeraja Yadwakar (VMware / UT Austin), Rodrigo Fonseca (MSR)

**ML Systems (Wednesday 4.30pm)**
- Matei Zaharia (moderator)
- Kim Hazelwood (Meta), Peter Mattson (Google) Luis Ceze (UW/OctoML), Michael Carbin (MIT), Kunle Olukotun (Stanford/SambaNova).
Questions/Discussion