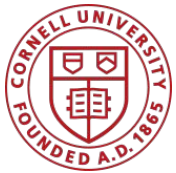
East Coast P4 Developer Day Welcome

Nate Foster
Cornell University



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State of P4

- **Industry Momentum**
  - P4-enabled targets now available
  - New P4 products and deployments announced
- **Academic Interest**
  - P4 is increasingly being used as a platform for teaching and research
  - Papers at SIGCOMM and NSDI
  - Tutorials at PLDI, SIGCOMM, etc.
  - Courses at Cornell and Stanford
- **Open Source Community**
- P416 P4 Runtime, PSA
- Growing collection of P4 software tools
- New Applications Working Group

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P4.org Members

Original P4 Paper Authors:

BAREFOOT NETWORKS, Google, intel, Microsoft, PRINCETON UNIVERSITY, Stanford University

Operators/ End Users

Alibaba Group 阿里巴巴集团, Baidu 百度, FOX, Goldman Sachs, at&t, COMCAST, Google, kt, Microsoft, Tencent 腾讯, SK telecom

Systems

ARISTA, BROCADE, CISCO, DAHO Networks, CORSA, DELL, Hewlett Packard Enterprise, HUAWEI, Inventec, INTRACOM TELECOM, JUNIPER NETWORKS, mantis, NETBERG, NetBRIC, NoviFlow SDN made smarter, OpenxNet, ZTE, XENTECH

Targets

AEPONYX Moving the Cloud at the Speed of Light™, Atomic Rules, BAREFOOT NETWORKS, CAVIUM, EZCHIP, intel, NETCOPE TECHNOLOGIES, Mellanox TECHNOLOGIES, BROADCOM connecting everything, centec networks, freescale, Innovium, MoSys, NETRONOME, PLUMgrid, vmware, MARVELL, STORDIS The High Performance Distributor, XILINX

Solutions/ Services

EstiNet, happiest minds, HGLOBAL HITECH, SDNLAB 专注网络创新技术, FLOW RESEARCH

Academia/ Research

Bii 天地互连, Cornell University Founded A.D. 1865, 國立交通大學 National Chiao Tung University, KOREA UNIVERSITY, PRINCETON UNIVERSITY, salzburgresearch, uni.lu UNIVERSITÉ DU LUXEMBOURG, Università della Svizzera Italiana, Eötvös Loránd University, POLITECNICO MILANO 1863, POLYTECHNIQUE MONTRÉAL, Stanford University, UFRGS UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL, VirginiaTech Invent the Future

- **Open source**, evolving, domain-specific language
- Permissive Apache license, code on GitHub today
- **Membership is free**: contributions are welcome
- Independent, set up as a California nonprofit

Goals

- **Learn P4 Language**
  - Traditional applications
  - Novel applications
- **Learn P4 software tools**
  - P4 Compiler
  - BMv2
  - P4 Runtime
- **Learn about future technology trends**
  - Keynote by Jennifer Rexford
  - Panel with representatives from Juniper, JP Morgan, and Princeton
- **Network (the other kind)**
- **Have fun!**

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Introduction to Data Plane Programming

Language Basics

Break

Software Tools & P4 Runtime

Keynote (Jenifer Rexford)

Lunch

Monitoring & Debugging

Break

Advanced Data Structures

Closing Panel

Reception @ Riverwalk Bar & Grill

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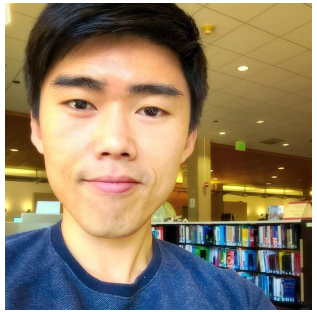
Instructors

Stephen Ibanez
Stanford

Praveen Kumar
Cornell

Mina Arashloo
Princeton



Sean Choi
Stanford

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Thank you

- **Cornell Tech**
- **Kathy Mendall**
- **Vanessa Maley**
- **Sedef Ozcana**
- **Instructors**
- **Jennifer Rexford**
- **Instructors**
- **TAs**
  - Rob Harrison
  - Thomas Mason
  - Anirudh Kondaveeti
- **You!**

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