Tenzin Samten Ukyab

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Education

University of California Berkeley Berkeley, CA
PhD student in Computer Science 2021-present
Massachusetts Institute of Technology Cambridge, MA
Masters of Engineering in Computer Science 2020-2021
Bachelor of Science in Electrical Engineering and Computer Science; GPA of 4.6 out of 5.0 2016-2020

- Select coursework: Distributed Systems, Networks, Operating System Engineering, Modeling with Machine Learning, Design and Analysis of Algorithms

The Bronx High School of Science Bronx, NY
Final GPA of 95 out of 100 2012-2016

Publications

Making Cellular Networks More Efficient By Roaming-in-Place.
Tenzin S. Ukyab, Lisa Suzuki, Demetrius Davis, Zhihong Luo, Silvery Fu, Shaddi Hasan, Sylvia Ratnasamy, Scott Shenker
SIGCOMM, 2025

RANBooster: Democratizing advanced cellular connectivity through fronthaul middleboxes.
Xenofon Foukas, *Tenzin Samten Ukyab*, Bozidar Radunovic, Sylvia Ratnasamy, Scott Shenker
SIGCOMM, 2025

LSched: A Workload-Aware Learned Query Scheduler for Analytical Database Systems
Ibrahim Sabek, *Tenzin S. Ukyab* and Tim Kraska
SIGMOD, 2022

Sapphire: A Configurable Crypto-Processor for Post-Quantum Lattice-based Protocols
Utsav Banerjee, *Tenzin S. Ukyab* and Anantha P. Chandrakasan
IACR Transactions on Cryptographic Hardware and Embedded Systems, 2019(4), 17-61

- Finalist at the ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED) 2020 design contest

Research Experience

Microsoft Networking Group Redmond, WA
Research Intern 2024

- Built a front haul middlebox to enable various advance cellular connectivity features

MIT Databases Systems Group Cambridge, MA
MEng Thesis advised by Tim Kraska 2020-2021

- Developing a database management system that uses reinforcement learning to schedule tasks on multiple cores

MIT Networks and Mobile Systems Group Cambridge, MA
Undergraduate Researcher advised by Manya Ghobadi 2019-2020

- Modified the distributed training framework Horovod in C++ to not use the MPI Allreduce functionality; instead, used a protocol that aggregated distributed machine learning model gradients at the switch in order to reduce network communication and training latency
- Ran and tested the protocol on a 4 server testbed with a programmable FPGA at the switch on multiple different Tensorflow Keras models
- Observed that packet dropping in distributed machine learning can be used as a regularizer of the model and improve training time

MIT Energy-Efficient Circuits and Systems Group Cambridge, MA
Undergraduate Researcher advised by Anantha P. Chandrakasan 2018-2019

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- Implemented NIST Round 2 quantum-secure lattice-based CCA-secure key encapsulation and signature protocols Frodo, NewHope, qTESLA, CRYSTALS-Kyber and CRYSTALS-Dilithium on a processor that had specialized hardware for lattice-based cryptography using C and a custom language for the processor
- Optimized the encoding, decoding, reading, and writing of polynomials to the specialized hardware on the processor, leading to a 20% decrease in cycles
- Measured at least one order of magnitude decrease in the number of cycles and two orders of magnitude decrease in power consumption in all key generation, encryption, decryption, and signatures protocols
- Work published in IACR Transactions on Cryptographic Hardware and Embedded Systems 2019 and was a finalist in the ISPLED 2020 design contest

MIT Star Lab Cambridge, MA
Undergraduate Researcher advised by Kerri Cahoy 2016

- Simulated and analyzed image noise for the Deformable Mirror (DEMI) CubeStat using POPPY

Industry Experience

Google Make TCP Fast Team New York, NY
Software Engineering Intern 2020

- Reduced user space wakeups and CPU utilization for the Google Cloud Linux production kernels when an RPC is received to one per RPC using server application knowledge

Google Go Search App Team London, UK
Software Engineering Intern 2019

- Developed the first prototype of a launcher (home screen) app made specifically for Android Go phones with low compute and storage resources

Google Messages Cortex Team Seattle, WA
Software Engineering Intern 2018

- Instrumented the sending and receiving of Rich Communication Services (RCS) messages and analyzed the latency measurements
- Decreased the latency for sending an RCS message by 60% and receiving by 50%

Google Allo Expressions Team Mountainview, CA
Engineering Practicum Intern 2017

- Developed a new feature in image editing that automatically places stickers onto specific facial features with another intern
- Implemented an entry point button into the image editing in the application

Teaching Experience

Namchod Kyestel at Tibetan Association of Northern California Richmond, CA
Kindergarten Teacher 2022-present

- Teaching a small group of students around 5 years of age the Tibetan alphabet every Sunday

UC Berkeley CS 168 Introduction to the Internet: Architecture and Protocols Berkeley, CA
Project Teaching Assistant 2022

- Managed and updated the two coding projects on Internet routing and transport
- Held office hours to help students with the project
- Proctored and helped develop exams

Girls Who Code Virtual Summer Immersion Program New York, NY
Instructor 2021

- Instructed three 2-week virtual programs of 25 students each

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- Taught basic Python programming and guided them in developing a final project
- Managed two teaching assistants and onboarding external guest speakers

MIT 6.004 Computation Structures Cambridge, MA
Teaching Assistant 2020

- Taught two one hour recitations of 25 students each two times a week
- Held 8 hours of office hours to help students with labs and coursework
- Developed teaching materials such as quizzes, labs, and worksheets

MIT International Science and Technology Initiatives Tbilisi, Georgia
Global Teaching Labs Instructor 2019

- Planned and taught an Arduino programming curriculum to college age students

Robomindtech Queens, NY
Intern 2015-2016

- Develop curriculum of the Scratch video game design course
- Teaching assistant for lego robotics and Scratch video game design classes

American Museum of Natural History New York, NY
Saltz Intern 2014

- Engaged visitors of all ages in science learning activities on the floor of the museum

The Everett's Children Garden in The New York Botanical Garden Bronx, NY
Explainer 2012-2013

- Engage the children visiting the garden with fun and educational activities

Leadership and Activities

UC Berkeley Women in EECS Club Berkeley, CA
Social Chair 2021-2022

- Planned social events for the community of women identifying students in the EECS department

MIT Women in EECS Club Cambridge, MA
Co-president 2019-2020
Executive Director of the Mentorship Department 2018-2019

- Managed members and organized events to foster a sense of community for women in the MIT EECS department
- Initiated a mentorship program that matches underclassmen with upperclassmen who provide guidance and support

MIT Motorsports Cambridge, MA
Member and Webmaster 2016-2018

- Worked on a CAN feedback driven charging system for the electric Formula 1 race car
- Developed a new iteration of the team website: fsae.mit.edu
- Designed, CADed, and manufactured the frame and cooling system of the car

Bronx Science Fe-Maidens FIRST Robotics Team Bronx, NY
Programmer, Director of Strategy, & Webmaster 2012-2016

- Developed the robot code in a 6-week build season with a team of programmers
- Developed the new iteration of the team's website femaidens.github.io/Website/ with the Materialize framework
- Created and led a group of seven members to unpack the game and to design our robot

Girls Who Code Summer Immersion Program at AT&T New York, NY
Student 2014

- Learned public speaking skills, teamwork skills, and leadership skills as well as programming concepts

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- Developed a final project using that taught kids to write the Tibetan alphabet

Skills

Programming Languages: Java, Android development, Python, HTML, CSS, JavaScript, C++, and C
Spoken Languages: English, Tibetan, Hindi, Nepali, Spanish, French