

Esther Jang

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EDUCATION

UW

PHD IN ICTD/NETWORKS

Expected Jun 2022 | Seattle, WA

MIT

MENG IN NETWORKS AND COMMUNICATIONS

Jun 2016 | Cambridge, MA

BSC IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

May 2014 | Cambridge, MA

GPA: 4.7 / 5.0

COURSEWORK

GRADUATE

Human-Computer Interaction

Distributed Systems

Computer Networks

Computer Systems

Heterogeneous Networks

Programming Languages

Machine Learning

Natural Language Processing

Discrete Stochastic Processes

Inference and Information

Probabilistic Graphical Models

ICTD (Information and

Communication Technology for

Development)

UNDERGRADUATE

Signals & Systems

Digital Communications Systems

SKILLS

PROGRAMMING

Python • Go • SQL • R •

MATLAB • Mathematica •

Javascript • HTML • CSS

C++ • Java • Freeswitch

TEACHING

TA: UW CSE461 Computer Networks

TA: MIT 6.036 Machine Learning

SPOKEN LANGUAGES

English (native) • Korean (heritage)

• Spanish (conversational) • Swahili

(conversational) • Tagalog

(beginner) • Mandarin (beginner)

RESEARCH INTERESTS

Internet connectivity for rural remote regions • community networks and infrastructure • technology repair and sustainability • participatory design • participatory action research • makerspaces • assistive technology • computing education

PUBLICATIONS

ICTD '20 (IN REVIEW)

Stories Not Told: De-invisibilizing ICTD Field Experiences Through Autoethnography *Jang, Weld, Webster, Vistal, Johnson, Ziegler, Heimerl*

CSCW '19

Trust and Technology Repair Infrastructures in the Remote Rural Philippines *Jang, Garrison, Vistal, Cunanan, Perez, Martinez, Johnson, Barela, Evangelista, Ahmed, Dionisio, Heimerl*

ASSETS '19

Deep Learning for Automatically Detecting Sidewalk Accessibility Problems Using Streetscape Imagery *Weld, Jang, Li, Zeng, Heimerl, Froehlich*

HOTNETS '18

dLTE: Building a more WiFi-like Cellular Network (Instead of the Other Way Around) *Johnson, Sevilla, Jang, Heimerl*

CHI '18

Crowdsourcing Rural Network Maintenance and Repair via Network Messaging *Jang, Barela, Johnson, Martinez, Festin, Lynn, Dionisio, Heimerl*
Paper Preview Video <https://goo.gl/c4RC5y>

LIMITS '17

Unplanned Obsolescence: Hardware and Software After Collapse *Jang, Johnson, Burnell, Heimerl*

ICTON '17

Cognitive all-optical fiber network architecture *Chan, Jang*

OTHER PRESENTATIONS

ICTD '19 Open Session: Creating Your Own Path in ICTD *Jang and Karusala*

AWARDS

2019 ASSETS 2019 Best Student Paper Award

2019 CSCW 2019 Diversity and Inclusion Award

2019 UW SWE Outstanding Female Engineer Award

2019 Google Fellowship-UW CSE Nomination

2018 Mozilla/NSF-WINS Smart Community Networks Challenge- Design Concept, Honorable Mention

2015 MIT Assistive Technology Hackathon, 1st place

2014 Siebel Scholarship for academic excellence and leadership

2014 IEEE Communications Society Student Competition, 2nd place

2012 MIT Public Service Center and Baker Memorial Public Service Fellowships

RESEARCH EXPERIENCE

UW PAUL G. ALLEN SCHOOL OF COMPUTER SCIENCE AND ENGINEERING | PHD

Aug 2019 – Present | Iquitos, Peru

Design and planned deployment of community LTE networks in Maijuna indigenous communities along the Napo River in the Peruvian Amazon. Participatory design of local networked applications for indigenous cultural and language preservation and digital literacy.

Advised by **Dr. Kurtis Heimerl**, **Dr. Michael Gilmore**, and **Dr. Jason Young**, in collaboration with the **Pontificia Universidad Católica del Perú Grupo de Telecomunicaciones Rurales** and **Facebook**.

Jun 2019 – Present | Seattle, WA

Design and deployment of urban community cellular network for low-income residents of south Seattle.

Advised by **Dr. Kurtis Heimerl**, in collaboration with the **Internet Society** and the Seattle **Community Technology Advisory Board**.

Jan 2019 – Present | Oaxaca, Mexico and Quintana, Argentina

Qualitative field study of community network management structures and sustainability for cellular and wireless mesh networks in Oaxaca and Quintana. Development of community network toolkit for practitioners.

Advised by **Dr. Kurtis Heimerl** and **Dr. Michael Lithgow**, in collaboration with **AlterMundi**.

Sept 2016 – Dec 2018 | Aurora, Philippines

Participatory design of phone-based services for rural community cellular networks including cell site repair tools and endangered indigenous language preservation in Aurora Province, Philippines.

Qualitative field study of repair culture and infrastructure for computing devices in remote communities.

Deployment of 2G cell networks as part of a RCT impact evaluation of communications infrastructure.

Advised by **Dr. Kurtis Heimerl**, in collaboration with the **University of the Philippines WCEL** and **UC Berkeley**.

Project Site *Rural Repair Tools for Community Cellular Networks*: <https://goo.gl/awXmfZ>

MIT RESEARCH LABORATORY FOR ELECTRONICS (RLE) | MASTER'S

Jan 2015 – Jun 2016 | Cambridge, MA

Design of a delay-minimal cognitive routing algorithm with traffic estimation for metropolitan area wireless sensor networks.

Advised by **Dr. Vincent Chan**.

UNIVERSITY OF MARYLAND COLLECTIVE DYNAMICS AND CONTROL LABORATORY | NSF REU

Jun 2013 – Aug 2013 | College Park, MD

Designing and coding distance-based swarming algorithms for embedded miniature robots, using RSSI as distance metric.

Advised by **Dr. Derek Paley** and **Dr. Sarah Bergbreiter**. Presented at 2013 Conference for Undergraduate Research in VA.

Project Video <https://goo.gl/xUymzz>

MIT GLENN LABORATORY FOR THE SCIENCE OF AGING | UGRAD

Sep 2012 – May 2013 | Cambridge, MA

Computational modeling in R of microarray gene expression data to investigate genes involved in brain aging.

Advised by **Dr. Leonard Guarente**.

MIT SYNTHETIC BIOLOGY CENTER | UGRAD

Jun 2011 – Sep 2011 | Cambridge, MA

Constructing genetic circuits using wet lab cloning protocols, measuring and analyzing molecular signals.

Advised by **Dr. Rahul Sarpeshkar**.

INDUSTRY EXPERIENCE

MILLIMAN, INC. | MACHINE LEARNING RESEARCH INTERNSHIP

Aug 2014 – Dec 2014 | Cambridge, MA

Designed and implemented non-parametric models, visualizations, and human explainability algorithms for insurance claim decision modeling. Languages: MATLAB, Python, and MySQL.

LEAPYEAR INNOVATIONS | PART-TIME SOFTWARE ENGINEER

July 2014 – Nov 2014 | Cambridge, MA

Implemented optimization and inference algorithms in Python for marketing applications.

PERSONAL PROJECTS

NYC MESH | INSTALL LEADER

Dec 2019 - Jan 2020 | New York City, NY

Led installations of NYC Mesh network internet connections on members' roofs, including equipment configuration, secure mounting, and team coordination.

EMW BOOKSTORE COMMUNITY BIO-HACKERSPACE | VOLUNTEER

Jul 2015 – Jun 2016 | Cambridge, MA

Set up bio lab equipment, taught, participated in MIT/Harvard bio-hacking course "How to Grow (Almost) Anything."

MIT ASSISTIVE TECH HACKATHON | 1ST PLACE & MIT LEAP GRANT

Feb 2015 – Jun 2016 | Cambridge, MA

With community partner Adriana Mallozzi, designed and prototyped a portable sip-n'-puff bluetooth joystick mouse for people without use of their hands. Project spun off into a startup by community partner.

Project Site <http://puffinsip.com>

NYT Summer of Science profile <https://goo.gl/1aWSV4>

MIT PUBLIC SERVICE CENTER (PSC) | FELLOWSHIP

Oct 2011 – Aug 2012, Jan 2014 | Cambridge, MA & Arusha, Tanzania

Deployed a system for affordable Internet access at Orkeeswa Secondary School in rural Tanzania (still in use today).

Project Site <http://goo.gl/cWO5g5>

SELECTED PRESS

MIT News Senior Student Profile <https://goo.gl/WRq2kb>

MIT News Assistive Technology Hackathon <https://bit.ly/2OpM6tj>

FastCompany article on LIMITS publication <https://bit.ly/3aoAJZU>