

Tuka Alhanai, PhD

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BIOGRAPHY

I operate an [NSF seed-funded](#) company *that runs the [ghamut](#)*; deploying technologies that measure and improve our quality of life. I am also an Assistant Professor at New York University Abu Dhabi where I lead developments at the interface of human and machines. My work has been published in [prominent research venues](#) and has received international media coverage by [Wired](#) and [The Wall Street Journal](#).

EDUCATION

Massachusetts Institute of Technology, Cambridge MA USA June 2019
Doctor of Philosophy in Electrical Engineering & Computer Science
Thesis: *Forget-me-not: Detecting Cognitive Impairment from Spoken Language*

Massachusetts Institute of Technology, Cambridge MA USA Feb 2014
Master of Science in Electrical Engineering & Computer Science
Thesis: *Lexical and Language Modeling of Diacritics and Morphemes for Arabic ASR*

The Petroleum Institute, Abu Dhabi UAE June 2011
Bachelor of Science in Electrical Engineering

PROFESSIONAL EXPERIENCE

New York University Abu Dhabi, UAE Jan 2020 - Present
Assistant Professor

Directing research at the interface of machine learning, health, behavioral science, and human-machine interaction.

Ghamut Corporation, Okemos MI, USA Oct 2016 - Present
ghamut.com
co-Founder

Ghamut develops technologies at the interface of artificial intelligence and human interaction. Our products include a mood sensing wearable (EMOTE) and a platform (CONNECT) to facilitate connections between prospective friends and co-workers. Ghamut was the [winner of MassChallenge 2017](#) and is an awardee of an [SBIR grant from the NSF](#).

Business Talent Group July 2019 - Present
Consultant

Providing technical and strategic consulting in machine learning, data science, and software product development to Fortune 500 companies from a highly selective team of consultants.

MIT Computer Science and Artificial Intelligence Lab Sept 2011 - June 2019
csail.mit.edu

Research Assistant, Spoken Language Systems Group, Cambridge MA, USA

Conducted research to model humans' cognitive state from speech and language for health applications. This work was blogged about by [Bill Gates](#) and spurred [\\$15 million](#) in research funding.

Qatar Computing Research Institute

Summer 2013

Research Assistant, Arabic Language Technologies Group, Doha QATAR

I performed speech and language modeling on Arabic datasets, with 10+ years of data from the Al-Jazeera Broadcast News Network.

Abu Dhabi Company for Onshore Oil Operations

Summer 2010

Control Engineering Intern, Engineering & Major Projects Division, Abu Dhabi UAE

Developed working knowledge of technical operations of onshore oil-facilities and selecting specifications for wellhead instruments.

GRANTS

Emerging Technology Fund (\$125,000)

Nov 2019 - Present

State of Michigan

Designed to expand funding opportunities for Michigan technology based companies in the federal innovation research and development arena.

Small Business Innovation Research Award - Phase 1 (\$225,000)

Feb 2019 - Feb 2020

National Science Foundation

America's Seed Fund powered by the NSF helps startups and small businesses transform their ideas into marketable products and services. The fund, running strong for 40 years, focuses on high-risk, high-impact technologies and each year, \$200 million in funding is awarded to entrepreneurs across the USA. A highly competitive non-equity fund with %15 funding rate for Phase 1.

Google Cloud Startup Program (\$20,000)

Nov 2018 - Present

Google Cloud support for promising start-ups.

Connect Community Fund (\$60,500)

Jan 2015 - Present

Funding for community building over lunch across multiple university campuses in the USA.

Al Nokhba Scholarship (\$500,000+)

2011 - 2019

Abu Dhabi Education Council UAE

A highly competitive full-ride scholarship with a 5% acceptance rate that covers MIT SM/PhD Program. It facilitates industrial liaisons, mentorship, extra-curricular professional and personal development.

AWS Startup Program (\$10,000)

Jan 2017

Amazon Web Services

Provides credit and support to develop cloud-based computational infrastructure.

Sandbox Innovation Fund (\$20,000)

2016 - 2018

MIT Sandbox

Provides seed funding and mentorship for student-initiated ideas. See Project CONNECT for more details.

Legatum Fellowship for Entrepreneurial Leadership (\$20,000)

2016 - 2017

MIT Legatum Center for Development & Entrepreneurship

Selected as part of cohort of 20 highly motivated MIT entrepreneurial leaders. Working to accelerate progress in the developing world through innovation-driven ventures. See Project CONNECT for more details. My profile as a fellow can be viewed [here](#).

Graduate Student Life Grant (\$16,000 renewable) Dec 2014, 2015
MIT Office of the Dean for Graduate Education

Multi-year grant to organize community building activity. See Project CONNECT for details.

Abu Dhabi National Oil Company Scholarship (\$150,000+) Sept 2006 - June 2011
The Petroleum Institute Abu Dhabi UAE

Full-ride scholarship covering undergraduate education, covering tuition, and support for professional and personal development.

AWARDS

Distinguished Scholar Abroad Jan 2019
UAE Government Excellence Awards

Bi-annual award program launched by the Sheikh Khalifa Government Excellence Program to encourage the UAE's public sector to continuously enhance its systems, performance and services. Media coverage of the award can be viewed [here](#), which was granted by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai.

MIT Technology Review 10 Innovators Under 35 Sept 2018
EmTech MENA

Since 1999, MIT Technology Review has honored the young innovators whose inventions and research are most exciting. Today that collection is Innovators Under 35, a list of technologists and scientists, all under the age of 35. The press-release announcing the award can be viewed [here](#).

Best Student Paper Award Sept 2018
ISCA Interspeech Conference, Hyderabad INDIA

Best paper is selected through anonymous peer-review process and evaluated from an in-person presentation of the work.

MassChallenge Boston Oct 2017
Winner

128 early-stage startups in the 2017 MassChallenge Boston accelerator program, are selected by a community of more than 850 expert judges. This year's competitive cohort represents the top 8% of applications from around the world. The press-release announcing the award can be viewed [here](#).

MIT\$100K Launch Competition April 2017
Semi-finalist

The MIT\$100K Entrepreneurship Competition is one of the largest and most famous business plan competitions in the world. A business plan competition to plan, prototype, and prepare venture for the marketplace.

Young Emirati Researchers Prize Jan 2016
UAE National Research Foundation

Honors outstanding young national talents in research.

Pioneers of Innovation Award Dec 2015

UAE Ministry of Higher Education & Scientific Research

In recognition of original contribution to research in the field of engineering. Awarded by His Excellency, Sheikh Hamdan bin Mubarak AlNahyan, Minister of Higher Education.

Verizon Powerful Answers Award Aug 2015

Semifinalist

Multi-million dollar challenge for entrepreneurs, companies and innovators worldwide to provide innovative solutions in Transportation, Emergency Response and Internet of Things. See Project EMOTE for details.

MIT IDEAS Global Challenge April 2015

Finalist

Annual invention and entrepreneurship competition for innovative service projects that positively impact underserved communities. See Project Power Foods for details.

Academic Award for Scholars Abroad Jan 2015

Abu Dhabi Education Council UAE

In recognition of high academic achievement in the 2013-2014 academic year. Honored by His Highness Sheikh Hazza bin Zayed Al Nahyan, VP of Abu Dhabi Executive Council.

Young Future Energy Leader Jan 2013

MASDAR Abu Dhabi UAE

International program to develop tomorrow's leaders in the fields of advanced energy and sustainability. Sponsors trip to World Future Energy Summit, and leadership, policy, and technology courses.

Provost's Honor List 2007 - 2010

The Petroleum Institute Abu Dhabi UAE

Awarded to high academic achievers. Received every year I qualified for award.

Sheikha Sheikha bint Saif Memorial Prize - Community Shield June 2006

Al Shohub School Abu Dhabi UAE

Awarded by Her Highness to the graduating student best serving her community.

PARTNERS & COLLABORATORS

The Framingham Heart Study 2016 - 2019

Framingham MA

In 1948, FHS scientists and participants embarked on an ambitious project to identify risk factors for heart disease. Today, the study remains a world-class epicenter for cutting-edge heart, brain, bone, and sleep research. It is the study to establish that 'smoking is bad for you'.

Boston University Medical School 2016 - 2019

Boston MA USA

Renowned for the quality of teaching and research and for service to the community, these schools provide education and training in the most current thinking and techniques in their fields, with a particular focus on serving disadvantaged, underserved, and indigent populations. Currently working on research and infrastructure development of digital health applications.

Massachusetts General Hospital

2016 - 2018

Boston MA USA

Massachusetts General Hospital has been ranked among the top five hospitals in the United States by U.S. News & World Report ever since the rankings began. Mass General is recognized as #4 out of nearly 5,000 hospitals considered in the ranking. Working to apply temporal-based machine learning algorithms for coma prognostication - predicting if individuals wake-up from their coma.

Samsung Corporation - Strategy and Innovation Center

2015 - 2016

San Jose CA USA

SSICs focuses on strategic initiatives in areas such as digital health; data center and cloud computing; human-computer interface technologies; and the Internet of Things, among others. I worked with the Signal Processing team to test their research-grade smartwatch (only 100 in existence) to evaluate sensor technologies that would be deployed in their future smartwatch products and rendered proposals to their executive team on future avenues ripe for pursuit.

PROJECTS

Connect

Jan 2015 - Present

Co-developer

[connectmaven.com]

A community building platform to connect MIT and Boston area students for one-on-one lunches. I developed, and implemented an automated back-end that signs-up, pairs participants, and reimburses lunches. The program has been awarded \$60,000 in funding from MIT Dean for Graduate Education, Mind+Hand+Heart Innovation Fund, Legatum Fellowship, and Sandbox Innovation Fund. The program was also featured on the front page of the [MIT Newspaper - The Tech](#).

What Makes a Winning Team?

2016 - 2020

Co-investigator

What makes a great idea, a successful team, and a winner? We look at the patterns in individual and team profiles to determine what kinds of people come together to form teams, and what ideas go on to succeed for the pre-eminent entrepreneurship competition, the MIT\$100K.

Forget-me-not

2016 - 2019

Investigator

Dementia comes second only to spinal cord injuries in terms of its debilitating effects; from memory-loss to physical disability. The standard approach to evaluate cognitive conditions are neuropsychological exams, which are conducted via in-person inter-views to measure memory, thinking, language, and motor skills. Work is on-going to determine biomarkers of cognitive impairment, yet one modality that has been relatively less explored is speech. Speech has the advantage of being easy to record, and contains the majority of information transmitted during neuropsychological exams. To determine the viability of speech-based biomarkers, we utilize data from the Framingham Heart Study, that contains hour-long audio recordings of neuropsychological exams for over 5,000 individuals.

Wizard of Oz

2016 - 2019

Co-investigator

Medical professionals diagnose depression by interpreting the responses of individuals to a variety of questions, probing lifestyle changes and ongoing thoughts. Like professionals, an effective automated agent must understand that responses to queries have varying prognostic value. In this project we demonstrate an automated depression-detection algorithm that models interviews

between an individual and agent and learns from sequences of questions and answers without the need to perform explicit topic modeling of the content.

Gestalt

2016 - 2018

Co-investigator

Decisions about patient care, especially in the ICU, are complicated. Doctors aren't machines, they also have "gut feelings" about their patients. We studied 10 years of medical data, collecting information on all the patient factors that influence doctor's care decisions: age, gender, disease type and severity etc. But we also quantified how the doctor's felt about their patients by performing a sentiment analysis on their written care notes. This project was feature on the front page of [MIT News](#).

Life After Death

2016 - 2018

Co-investigator

Cardiac arrest impacts over half a million people a year. Even if successfully resuscitated, patients can enter an indefinite coma. Predicting if patients will wake up from coma can prevent premature withdraw of care. We compiled the world's largest dataset of Electroencephelograms (EEG) from patients in coma after cardiac arrest, and built advanced algorithms that use EEG to rapidly predict coma outcomes.

Personalized Medication Dosing

2016 - 2018

Co-investigator

Mis-dosing sensitive medications can have dire consequences for patient care. We developed a personalized medication dosing algorithm that is robust to missing data, a common problem in intensive care settings. The approach was 29% more accurate than intensive care staff, and better able to distinguish outcomes than non-personalized models.

Images2Spreadsheet: Digitizing Paper Records

2016 - 2018

Co-investigator

Clinical researchers, historians, educators and field researchers regularly capture data on paper spreadsheets. We built a tool that transcribes images of paper-based spreadsheets into electronic form. The open-source tool provides a generalized solution for spreadsheet transcription that maintains privacy, is up to 10 times faster and twice as cost effective as existing alternatives.

Power Foods

Jan 2015 - 2016

Entrepreneur

A venture to export Dried Fruits & Dates from Arabia to the World. The venture was a finalist in the MIT IDEAS Global Challenge Competition.

EMOTE - Estimated Mood Of Two Entities

Jan 2015 - 2016

Co-developer

[\[video\]](#)

A platform to quantify social interactions by combining audio, and physiologic signals. The Samsung Corporation provided prototypes of their research-grade wearable device to evaluate the sensor processing mechanism. The project was a semifinalist in the Verizon Powerful Answers Award Competition, was published in AAAI 2017, was featured on the frontpage of [MIT News](#), and recognized by [The Wall Street Journal](#) and BBC, among other global media platforms.

Fly into Space! Youth Competition

June 2015 - 2016

Organizer

Worked to organize a competition where UAE university students develop a novel project to be conducted in a Zero-G environment.

Organizer

Organized a two-week MIT immersion program for 30+ Emirati undergraduate engineering students. Students had the opportunity to visit cutting-edge research labs, interact with entrepreneurs, participate in art studio activities, and Boston cultural activities. Students were hosted by AeroAstro, AGE Lab, Media Lab, Schlumberger, MIT Museum, EAPS (Earth, Atmospheric & Planetary Science), Microsystems Technology Lab (MTL), and the Computer Science & Artificial Intelligence Lab (CSAIL) at MIT.

PUBLICATIONS**The Automated Venture Capitalist:****Data and Methods to Predict the Fate of Startup Ventures**

Feb 2020

M. Ghasemi, C. Song, & T. Alhanai

AAAI-20 Workshop on Knowledge Discovery from Unstructured Data in Financial Services, New York USA

[\[paper\]](#)**Quant. EEG Trends Predict Recovery in Hypoxic-Ischemic Encephalopathy**

June 2019

MM. Ghassemi, E. Amorim, T. Alhanai, JW. Lee, ST. Herman, A. Sivaraju et al.

Critical Care Medicine

[\[paper\]](#)**Detecting Depression with Audio/Text Sequence Modeling of Interviews**

Sept 2018

T. Alhanai, MM. Ghassemi, & J. Glass

Interspeech, Hyderabad INDIA

[\[paper\]](#) [\[slides\]](#) [\[poster\]](#) [\[code\]](#) [\[media\]](#)**How is the Doctor Feeling?****ICU Provider Sentiment is Associated with Diagnostic Imaging Utilization**

July 2018

M. Ghassemi, T. Al-Hanai, J.D. Raffa, R.G. Mark, S. Nemati and F. H. Chokshi

IEEE Engineering in Medicine and Biology Conference, Honolulu HA USA

[\[paper\]](#) [\[poster\]](#) [\[media\]](#)**Novel Digital Voice Biomarkers of Dementia from the Framingham Study**

July 2018

D. Stuck, A. Signorini, T. Al Hanai, M. Sandoval, C. Lemke, J. Glass, S. Hardy, M. Lavallee, B.

Wasserman, T.F.A. Ang, C. Nowak, and R. Au

Alzheimer's Association International Conference, Chicago IL USA

Role-specific Lang. Modeling for Processing Recorded Neuropsych. Exams

June 2018

T. Alhanai, R. Au, & J. Glass

NAACL Human Language Technologies, New Orleans LA USA

[\[paper\]](#) [\[poster\]](#)**Personalized Medication Dosing Using Volatile Data Streams**

Feb 2018

M. Ghassemi, T. Alhanai, M.B. Westover, R.G. Mark, and S. Nemati,

AAAI W3PHI, New Orleans LA USA

[\[paper\]](#) [\[code\]](#)

- An Open-Source Tool for the Transcription of Paper-Spreadsheet Data** Dec 2017
M. Ghassemi, W. Jarvis, T. Alhanai, E. Brown, R.G. Mark, and M.B. Westover
IEEE BigData, Boston MA USA
[\[paper\]](#) [\[code\]](#)
- Spoken Language Biomarkers for Detecting Cognitive Impairment** Dec 2017
T. Alhanai, R. Au, & J. Glass
IEEE Automatic Speech Recognition and Understanding Workshop, Okinawa JAPAN
[\[paper\]](#) [\[code\]](#)
- Predicting Latent Narrative Mood using Audio and Physiologic Data** Feb 2017
T. Al Hanai & M. Ghassemi, AAIL, San Fransisco USA
[\[paper\]](#) [\[code\]](#) [\[media\]](#)
- Dev. of the MIT ASR Sys. for the 2016 Arabic Multi-Genre Challenge** Dec 2016
T. Al Hanai, W. Hsu, & J. Glass
Spoken Language Technology Workshop, San Diego CA USA
[\[paper\]](#)
- Lexical Modeling for Arabic ASR: A Systematic Approach** Sept 2014
T. Al Hanai, & J. Glass
Interspeech, SINGAPORE
[\[paper\]](#)
- Recent Advances in ASR Applied to an Arabic Transcription System** Sept 2014
P. Cardinal, A. Ali, N. Dehak, Y. Zhang, T. Al Hanai, Y. Zhang, J. Glass, S. Vogel
Interspeech, SINGAPORE
[\[paper\]](#)

THESIS

- Forget-me-not:
Detecting Cognitive Impairment from Spoken Language**
PhD Thesis, Massachusetts Institute of Technology May 2019
[\[thesis\]](#)
- Lexical & Language Modeling of Diacritics and Morphemes in Arabic Automatic Speech
Recognition**
SM Thesis, Massachusetts Institute of Technology Feb 2014
[\[thesis\]](#)

PRESENTATIONS

- How Are You Feeling? Determining Latent State of Individuals Engaged in Conversation**
MIT CSAIL Research Highlights Cambridge MA USA Nov 2016
- Arabic Automatic Speech Recognition**
QCRI/MIT-CSAIL Meeting, Cambridge MA USA Oct 2016
- MSA Speech Recognition with Deep Neural Networks**
QCRI/MIT-CSAIL Annual Meeting, QATAR March 2016
- Lexical Modeling for Arabic ASR: A Systematic Approach**
QCRI/MIT-CSAIL Annual Meeting, QATAR March 2015

Arabic ASR

MIT-CSAIL Alliance Program Annual Meeting, Cambridge MA USA May 2014

Lexical and Language Modeling of Diacritics and Morphemes for Arabic ASR

MIT EECS Masterworks, Cambridge MA USA April 2014

Lexical and Language Modeling for Arabic ASR

QCRI/MIT-CSAIL Annual Meeting, QATAR March 2014

Progress in Arabic Speech Recognition

QCRI/MIT-CSAIL Annual Meeting, QATAR March 2014

Taking Solar Energy Seriously in the UAE

HSE, Sustainability, & Earth Day, The Petroleum Institute, Abu Dhabi UAE April 2010

Renewable Energy

Earth Day, The Petroleum Institute, Abu Dhabi UAE April 2009

INVITED TALKS

Detecting Cognitive Impairment from Spoken Language

Michigan State University, Lansing MI USA Sept 2019

New York University, Abu Dhabi UAE Sept 2019

Machine Learning & Mental Health

CapitalOne, Mclean VA USA May 2019

Scientists without Boundaries

UAE National Science, Technology, and Innovation Festival, Dubai UAE Feb 2019

Detecting Depression from Speech

Mass General Hospital, Boston MA USA Dec 2018

[Video] A.I. that can feel.

MIT Technology Review EmTech MENA Conference, Dubai UAE Sept 2018

Spoken Language Biomarkers for Detecting Cognitive Impairment

ODSC East, Boston MA USA May 2018

Spotting Survivors: Predicting the Fate of Startup Ventures

ODSC AI Meetup, Cambridge MA USA April 2018

Know Thyself: Data Science

University of Tennessee, Knoxville TN USA Jan 2018

George Mason University Student Visit

The Petroleum Institute, Abu Dhabi UAE Jan 2018

MedStart Conference

Tufts University School of Medicine, Boston MA USA Dec 2017

Technology to Improve Quality of Social Interactions

Deep Learning in Healthcare Summit, Boston MA USA May 2017

Predicting Latent Narrative Mood using Audio and Physiologic data

:) Affectiva, Boston MA USA March 2017

AI Social Coach and Doctor

Samsung Strategy and Innovation Center, San Jose CA USA Feb 2017

SPARQ: Echo Chambers? There's an App for That

Stanford University, Stanford CA USA Feb 2017

From the Power of Data, to the Data of Power

Khalifa University, Abu Dhabi UAE

March 2016

Meaning of Data: Humans, Sensors, Speech, and Language

Carnegie Mellon University, Doha QATAR

March 2016

Graduate School: Information + Experiences

Mubadala Investment Company, Abu Dhabi UAE

Dec 2015

From the Power of Data, to the Data of Power

Federal Authority for Nuclear Regulation (FANR), Abu Dhabi UAE

Dec 2015

TEACHING EXPERIENCE

6.S03 MIT Intro EECS II - Medical Technologies*Teaching Assistant, EECS Department*

Feb 2015 - June 2015

*Cambridge MA USA*Professors: [Collin Stultz](#), [Joel Voldman](#), [Elfar Adelsteinson](#), & [Jacob White](#)

Course covered topics in signal processing and machine learning for measuring glucose concentration, ECGs, and MRI. I facilitated office hours, lab sessions, material development, and exam design for 200+ students.

MIT IAP Course - Technologies for Speech and Language Processing*Instructor*

Feb 2016

Cambridge MA USA

Students learn the theory of audio signal processing, machine learning, and pattern recognition. I co-designed, and taught the 5 session course. The materials can be accessed on the [course website](#).

MIT IAP Course - Explore the Emirates*Instructor*

Feb 2016

Cambridge MA USA

Developed a discussion based course on the multiple dimensions of the UAE and MENA region. Topics were interdisciplinary; composed of science, engineering, business, policy, and international relations.

MENTORSHIP & SUPERVISION

Chris Song*Digital Cognitive Health*

Summer 2019

Senior in Cognitive Science at John Hopkins

Developing computer-based tasks to measure cognitive health with the power of the crowd.

Minh Phan*Software Engineering*

Summer 2019

High School student

Developing web-based interfaces to render and share information.

Pramoda Karnati*Detecting Depression from Speech*

Fall 2018

Junior in EECS at MIT

Training of neural networks for detecting depression from speech.

Yasmine Simone*Market Strategy for Global Outreach*

Summer 2018

Junior in Anthropology at UMaryland

Development of marketing materials and outreach strategy for a global community to adopt a community building platform.

Chris Song*Market Strategy for Enterprises*

Summer 2018

Junior in Cognitive Science at John Hopkins

Development of marketing materials and outreach strategy for enterprises to adopt a community building platform.

Hedyeh Elahinia

Market Strategy for Academia

Summer 2018

Junior in Cognitive Science at UToledo

Development of marketing materials and outreach strategy for academic institutions to adopt a community building platform.

Willow Jarvis

Technology Developer

Summer 2017

MEng in EECS at MIT

Development of an iOS front-end app to render information from the Connect platform.

Angie Boggust

Predicting Alzheimer's Disease Through Speech Processing

Fall 2016

Rising Junior in EECS at MIT

(Para)linguistic analysis of neuropsychological tests to assess Alzheimer's disease and dementia.

Hao Shen

Real-time Automatic Speech Recognition

Jan 2016

Junior in EECS at MIT

Evaluated performance of online speech recognition decoder for a mix of datasets

Taha Merghani

Pronunciation Modeling for Egyptian Arabic

June - Aug 2015

Sophomore in MSRP at MIT

Built speech recog. system for a comparative study of lexicons generated with latest text proc. tools. Presented at MIT Summer Research Program (MSRP) poster session. Acceptance in SACNAS 2015.

Michael Xu

Encrypted Storage Applicaton for BlueDBM

March - April 2015

Senior in EECS at MIT

Poster review for EECS Undergraduate Conference.

Zixi Liu

Oxygenation Patterns in Preterm Neonates

March - April 2015

Junior in EECS at MIT

Poster review for EECS Undergraduate Conference.

Provided guidance on pitching work and acquiring further medical data for analysis.

PATENT

Methods And Systems For Determining People You Should Know and Autonomous Social Coaching

Pending - Submitted April 2017

STRENGTHS

Human Languages

Fluent in English & Arabic. Basic French, German, and Spanish.

Computer Languages

C/C++, MATLAB, Perl, PIC Assembly, Python, VHDL.

Protocols & APIs

CSS, HTML, Javascript, JSON, SQL, XML.

Tools

Eclipse, Kaldi, Keras, MPLAB, Multisim, OrCAD PSPice, Pycharm, Pytorch, SolidWorks, Spyder, Tensorflow, Vim, Visual Studio, Xcode.

Skills

Analytical Reasoning, Critical Thinking, Persuasive Writing, Fundraising, Leadership, Pitching, Problem Solving, Research.

COURSEWORK

Graduate

EECS - Automatic Speech Recognition
EECS - Biomedical Image & Signal Processing
EECS - Acoustics of Speech & Hearing
EECS - Computational Biology
Urban Planning - Transportation Policy
Urban Planning - Technology, Globalization, and Sustainable Development
Management - Social Impact at Scale through Innovation

Undergraduate

Mathematics: Calculus (Single/Multivariable) - Differential Equations - Advanced Mathematics for Engineers - Linear Algebra - Probability & Statistics
Science: Physics (Newtonian Mechanics, Electromagnetics, Modern) - Chemistry
Engineering: Circuits - Electronics - Control Systems - Power Electronics - Power Systems Analysis - Microprocessors - Electromagnetics - Intro to Petroleum Engineering - Engineering Design
Humanities & Social Sciences: Economics - German - Political Science

PROFESSIONAL SERVICE

Academic Research Journals and Conference Proceedings

Reviewer

IEEE Journal of Biomedical and Health Informatics, Journal of Computer Speech and Language.

Program Application Committee

Reviewer

MIT EECS Graduate Program 2017
MIT Summer Research Program (MSRP) 2016, 2017

MIT Summer Research Program (MSRP) Summer 2015

Mentor

Mentored undergraduate on research project in the domain of speech recognition. Guided student through research question ideation, structuring experiments, learning relevant technical concepts, orientation on computational resources, and effective work presentation.

MIT EECSCon - Course VI Undergraduate Research Conference Spring 2015

Mentor

Guided UROPs on effective research presentation and provided feedback on potential future work trajectories.

COMMUNITY SERVICE

MIT Sandbox Innovation Fund Fall 2018 - Present

Mentor

Mentor early-stage start-ups.

Society of Refined Scientists Spring 2015 - Present

Treasurer

MIT Student Group

Organizes large-scale themed event to engage people in public speaking and team work activities in a light-hearted manner. Operating with more than \$25,000 in MIT funding.

GradSAGE

Member

Dec 2017 - Present

MIT Advisory Group for Engineering

GradSAGE is charged to provide the MIT Dean of Engineering a direct connection to the graduate student experience and perspective on a broad range of topics: education, engagement, research, and graduate student life.

Mind+Hand+Heart Initiative

Member of Connectedness Committee

Oct 2015 - Jun 2016

Enhancing mental health and well-being at MIT. Campus-wide initiative by the Chancellor's Office, MIT Medical, and Jed-Clinton Foundation. Campus-wide initiative by the Chancellor's Office, MIT Medical, and Jed-Clinton Foundation.

Recreational Advisory Committee

Institute Member

Sept 2014 - Jun 2016

MIT Institute Committee

Provide feedback on ideas, perceptions, needs, and desires to help shape decisions of recreational administrators at the Department of Athletics, Physical Education, and Recreation (DAPER). Facilities welcome 750,000+ visitors a year.

MIT High School Mentorship Program

Mentor

Jan - Dec 2013

MIT Student Group Program

Guiding students towards college and beyond. Aided in goal development, pursuit of extra-curricular experiences, university application, and career guidance.

CERTIFICATIONS

MIT PhD Minor in Public Policy

Oct 2015

Completion of two Higher-level Graduate coursework in the domain of public policy. *Transportation Policy* with Fred Salvucci, former chief of Mass Department of Transportation (MASSDOT), and *Technology, Globalization, and Sustainable Development* with Professor Nicholas Ashford, a major thinker in sustainability, business, regulatory law, and design of government policies.

MIT Kaufman Teaching Certificate

June 2015

Intensive two-week program covering learning theory, course development, and teaching methodologies. Exclusively designed for those committed to the teaching enterprise.

Harvard-MIT Minor in Speech and Hearing Bioscience and Tech. (SHBT)

June 2015

Conducted SHBT-themed research work under supervision of SHBT faculty Dr. James R. Glass, and completed higher-level graduate coursework in the domain of Speech and Hearing.

MEDIA

A.I. That Can Feel + Top 10 Innovators Under 35

[MIT Technology Review](#)

September 2018

Model Can More Naturally Detect Depression in Conversations

[MIT News](#) - [TechCrunch](#) - [AAAS](#) - [Forbes](#) - [Smithsonian](#) - [Popular Science](#)

September 2018

Physician Intuition: Doctors Rely on More than Just Data for Medical Decision Making

[MIT News](#) - [BJ-HC](#) - [Clinical Innovation](#) - [CMAJNews](#) - [TheNational-AE](#)

July 2018

Sensing the Unspoken: Wearable AI system can detect a conversation's tone

[MIT News](#) - [BBC](#) - [Wired](#) - [Wall Street Journal](#) - [Newsweek](#) - [Forbes](#)

Feb 2017

Break out of your echo chamber: Technology arranges lunch with someone new The Conversation	Dec 12th 2016
Algorithm Connects Students to the Most Interesting Person They've Never Met MIT News - World Economic Forum - ACM	Oct 19th 2016
MindHandHeart Initiative announces first-round Innovation Fund grant recipients MIT News	Nov 12th 2015
MIT Connect uses Algorithm to Pair Grad Students for Lunch The Tech	Oct 8th 2015

REFERRALS

James Glass, PhD <i>Senior Research Scientist and Lead of Spoken Language Systems Group @MIT Computer Science & Artificial Intelligence Laboratory</i> Research advisor and mentor throughout Masters and PhD program.	Sept 2011 - Present
Rhoda Au, PhD <i>Professor of Anatomy and Neurobiology @Boston University School of Medicine, Professor of Epidemiology @Boston University School of Public Health, and Faculty Member @Framingham Heart Study</i> Advisor and collaborator of digital health speech projects related to the Framingham Heart Study.	Feb 2016 - Present
Timothy Wilson, PhD <i>Professor of Psychology @University of Virginia</i> Collaborator on Connect at University of Virginia.	Feb 2018 - Present
Collin Stultz, PhD MD <i>Professor of Electrical Engineering & Computer Science @MIT, Principal Investigator @MIT Research Lab of Electronics, and Principal Investigator @MIT Institute for Medical Engineering & Science</i> Was a member of my PhD thesis committee, as well as the faculty I served during my Teaching Assistant-ship.	Feb 2017 - Present
Roger Mark, PhD MD <i>Distinguished Professor of Electrical Engineering & Computer Science @MIT, Distinguished Professor of Health, Science & Technology @MIT, Professor of Medicine @Harvard Medical School</i> Served as a member of my PhD thesis committee.	Feb 2017 - Present