Sam M. Keene

Education

Boston University, Boston MA

Ph.D. in Electrical Engineering, August 2008

- Certificate in Computational Science, Center for Computational Science.
- NSF/IGERT Award

Columbia University, New York NY

M.S. in Electrical Engineering May 2002

Boston University, Boston MA

B.S. in Electrical Engineering, Sept 1998

Appointments

The Cooper Union New York, New York

John Manuck Distinguished Professor of Design	Sept 2023 - Present
Professor	Sept 2020 - Present
CV Starr Distinguished Research Professor	March 2019 - May 2021
Associate Professor of Electrical Engineering	Sept 2015 - Aug 2020
Assistant Professor of Electrical Engineering	Sept 2009 - Aug 2015

- Teaching a wide range of courses in signal processing, machine learning, communications, and networks.
- Pioneering new interdisciplinary courses in data science and machine learning in collaboration with the Schools of Art and Architecture
- Developed a new set of courses in the areas of machine learning and data science.
- Developed extensive programming labs for Intro to Communications, Wireless Communications, Networks, Stochastic Processes and Machine Learning. Primary languages used are MATLAB and Python.
- Supervising undergraduate student research and Masters theses in wireless communications, signal processing and machine learning, including numerous award winning projects.

Western New England College Springfield, Massachusetts

Visiting Assistant Professor — Fall 2008 - Spring 2009

- Taught courses in C C++, software engineering, digital signal processing
- Supervised lab work in circuit theory and logic design

The Carnegie Institute of Washington, Asnerlab

Palo Alto, California.

Intern — Summer 2006

- Enhanced CLAS, a LANDSAT software analysis package to process data from multiple satellites, such as SPOT, MODIS and Ali. Added filtering and equalization routines to CLAS data chain to improve performance of satellite analysis of Amazon rainforest images. Analyzed hyperspectral data to track invasive plant species in Hawaiian rainforest.

The Mathworks

Natick, Massachusetts

Communications engineer February 2001-Jan 2004, Summers 2004, 05, 07

- Implemented numerous communications algorithms, such as modulation, error control coding and adaptive equalization. Developed corresponding code generation templates for generation of stand-alone C code to support rapid simulation of communications systems.

Publications

"MIRTH: Metabolite Imputation via Rank-Transformation and Harmonization" Benjamin A Freeman, Sophie Jaro, Tricia Park, Sam Keene, Wesley Tansey, Ed Reznik *Genome Biology*, 2022

"Fast Automatic Artifact Annotator for EEG Signals Using Deep Learning" Dongkyu Kim, Sam Keene, *Book Chapter, Biomedical Signal Processing, Springer*, 2021

"TABS: Transformer Based Seizure Detection", J. Pedoeem, S. Abittan, G. Bar Yosef and S. Keene, *2020 IEEE Signal Processing in Medicine and Biology Symposium*, December 5, 2020

"Low Latency Timbre Interpolation and Warping using Autoencoding Neural Networks", Joseph Colonel, Sam Keene, *Audio Engineering Society Convention 149*, 2020

"Conditioning Autoencoder Latent Spaces for Real-Time Timbre Interpolation and Synthesis", Joseph Colonel, Sam Keene *2020 International Joint Conference on Neural Networks (IJCNN)*

"Fast Automatic Artifact Annotator for EEG Signals Using Deep Learning" Dongkyu Kim, Sam Keene, *IEEE Signal Processing in Medicine and Biology Symposium (SPMB)* 11 December 2019

"Autoencoding Neural Networks as Audio Synthesizers" Joseph Colonel, Christopher Curro, Sam Keene, *Proceedings of the 21st International Conference on Digital Audio Effects* 4-8 September, 2018

"A learned embedding space for EEG signal clustering", R Thiyagarajan, C Curro, S Keene, *IEEE Signal Processing in Medicine and Biology Symposium (SPMB)* 2 December 2017

"Improving Neural Net Auto Encoders for Music Synthesis", Joseph Colonel, Christopher Curro, Sam Keene, *Audio Engineering Society Convention 143*,8, July, 2017

"Estimating the Capacity of Solar Photovoltaic Panels Only Using Size, Colors, and Textures from Aerial Imagery" Brenda So, Corey Nezin, Vishnu Kaimal, Leslie Collins, Kyle Bradbury, Jordan M. Malof, Sam Keene. *IEEE International Geoscience and Remote Sensing Symposium* 23-28 July 2017

"Image Features for Pixel-wise Detection of Solar Photovoltaic Arrays in Aerial Imagery Using a Random Forest Classifier" Jordan M. Malof, Kyle Bradbury, Leslie Collins, Richard G. Newell, Alexander Serrano, Hetian Wu, Sam Keene. *IEEE International Conference on Renewable Energy Research and Applications* 20-23 November 2016

"A Genetic Algorithm for Joint Synchronization and Detection" Andrew Appolonsky and Sam Keene, *10th IEEE Broadband Wireless Access Workshop* 12 December 2014

"The Pattern Recognition Toolbox for MATLAB: An Open Source and Permissively Licensed Object Oriented Framework for Pattern Recognition" Kenneth D. Morton Jr., Sam Keene, Leslie Collins and Peter Torrione, https://arxiv.org/pdf/1406.5565.pdf

"Collision localization for IEEE 802.11 wireless LANs", Sam M. Keene and Jeffrey B. Carruthers. *Wireless Personal Communications.*, 1 March 2012

"Collision and Fade Localization within Packets for Wireless LANs ", Sam M. Keene and Jeffrey B. Carruthers. *Wireless Personal Communications.* 1 November 2010

"Collision Recovery techniques for Wireless LANs", Sam M. Keene *VDM Verlag* 19 May 2009.

"Loss Differentiation and Improved SNR Estimates at the Physical Layer in Wireless LANs", Sam M. Keene and Jeffrey B. Carruthers. *IEEE GLOBECOM Workshops 2008.* 30 November 2008

"Land-Use Allocation Protects the Peruvian Amazon", Paulo J. C. Oliveira, Gregory P. Asner, David E. Knapp, Anglica Almeyda, Ricardo Galvn-Gildemeister, Sam Keene, Rebecca F. Raybin, Richard C. Smith. *Science* 31 August 2007: Vol. 317. no. 5842, pp. 1233 - 1236

"Improved Error Correction in Wireless LANs using Erasures Decoding with Collision Localization", Sam M. Keene and Jeffrey B. Carruthers. *Global Telecommunications Conference, 2007. GLOBECOM '07*

Exhibition

"Hiding from the Eyes of the City" Sam Keene and Ben Aranda. Accepted to *Shenzhen 2019 Bi-City Biennale of Urbanism-Architecture*

Masters Theses advised

Predicting Isotopologue Counts from Bulk Metabolomics Data, Ravindra Bisram

Applying a Bayesian Structural Time Series Model to Infer Causal Impact in the Crypto Market, Philip Blumin

Graph Machine Learning with Scattering Transforms, Armaan Kohli

Improving Semantic Water Segmentation by Fusing Sentinel-1 Intensity and Interferometric Synthetic Aperture Radar (InSAR) Coherence Data, Ernesto Colon

Method to Impute Missing Features in Metabolomics Data using Rank-Transformation and Matrix Factorization, Sophie Jaro

Deep Learning Pipeline for Detection of Mild Cognitive Impairment from Unstructured Long Form Clinical Audio , Theo Jaquenoud

An Exploration of Probabilistic Models for Consumer Choices, Zhihao Zhang

Improving Flood Maps by Increasing the Temporal Resolution of Satellites Using Hybrid Sensor Fusion - Video Interpolation Networks,Yuval Epstain Ofek

Mississippi Jail Projections: Understanding The Bailable Population, Nithilam Subbaian

Pancancer Analysis to Bridge the Gap between Metabolomics and Transcriptomics through Machine Learning, Junbum Kim

Automatic Artifact Annotator for EEG Waves Using Recurrent and Convolutional Neural Networks, Dongkyu Kim

Autoencoding Neural Networks as Musical Audio Synthesizers, Joseph T. Colonel

Gradient-based Adversarial Attacks to Deep Neural Networks in Limited Access Settings, Yash Sharma

Learning a Latent Space for EEGs with Computational Graphs, Radhakrishnan Thiyagarajan

A Fully Convolutional Neural Network Approach to End-to-End Speech Enhancement, Frank Longueira

A Fully Convolutional Neural Network Approach to End-to-End Speech Enhancement, Frank Longueira

A Deep Reinforcement Learning Approach to the Portfolio Management Problem , Sahil S. Patel

Learning an End-to-End Physical Layer with Computational Graphs, Caleb Zulawski

Inferring the causal impact of Super Bowl marketing campaigns using a Bayesian structural time series model , Neema Aggarwal

OFDM Modulation Recognition Using Convolutional Neural Networks, Justin Alexander

Alternative Architectures for Image Generation and Residual Dilated Convolutions for Image Colorization with Adversarial Networks, Christopher Curro

Unsupervised Topic Clustering of Text Corpora, Daniel Gitzel

Distributed Synchronization for Ad-Hoc Operation in LTE, David Li

A Generative Model for Digital Camera Chemical Colorimetry, Jason Tam

A Paritioned Auto-encoder for Audio De-Noising, Ethan Lusterman

Classifying Phases of the Business Cycle: A Machine Learning Approach, Julia Astrauckas

Adaptive Phased Locked Loop for Interference Mitigation, Kevin Nguyen

Spectrum Sensing with Non-local Means, David Rubenstein

Synchronization of Interference to Facilitate Joint Detection, Andrew Apollonsky

Interactive Foreground Extraction with Superpixels, Abrar Rahman

Capture-Exploited Fair Rate Adaptation for 802.11 WLANs, Seung Hun Kang

Fair TCP Channel Access for IEEE 802.11 WLANs, Christopher Sang

Joint Spatial-Temporal Equalization of 3G HF Communications, Samantha Blaisdell

Notable undergraduate projects advised

- "A Multifactorial Correction Method for Tumor Mutation Burden" Anna Konvicka
  - Best Paper, IEEE MIT Research Technology Conference, 2022

"F.I.N.D.E.R. Forensic Inspection of Noisy Data in E.N.F. Recordings", Howie Chen, Noah Santacruz, Jonathan Weinrib.

- Top-10 Finish, IEEE Signal Processing Cup 2016

"Multiple-Input Multiple Output Optical Communication With Arduino", Victor Chan

- 1st place, IEEE Communications Society Student Paper Contest, 2013.

"Auditory Scene Classification Using Machine Learning Techniques", David Li, Jason

- Achieved 2nd highest accuracy in scene classification, IEEE AASP Challenge on Detection and Classification of Acoustic Scenes and Events, 2013

"iSCISM: Interference Sensing and Coexistence in ISM Band", Joseph Baylon, Ethan

- Published in High Frequency Electronics April 2012, front cover of magazine
- 1st place IEEE northeast regional paper competition, 2012

"Li-Fi: Redefining Communication", Calvin Q. Ball, Kevin Tien

- 3rd place IEEE northeast Regional Contest, 2012
- 2nd place RIT design competition, 2012

"Intelligent Channel Selection for IEEE 802.11", Krishna Karra, Takuya Otani and Samiur Rahman

- Honorable mention, 2011 IEEE northeast regional paper competition

Service

Co-Chair, Diversity and Inclusion Task Force, Fall 2017-present

Chair, Dean Search Committee Fall 2017-Spring 2018

President, Faculty Student Senate, Fall 2017-Present

Member, Middle States Steering Committee

Member, Mission sub-committee

Member, Community Planning Collaborative

Acting Vice President, CUFCT Fall 2018

Engineering Representative, CUFCT Executive Board, 2015-present

Chair, Faculty Student Senate Subcommittee on Gender Diversity, Spring 2017

Vice-President, Faculty Student Senate 2016-2017

Member, Faculty Student Senate 2015-present

Member, academic standards committee, 2013-2016

Co-Chair, IEEE Communications Society, New York City Chapter, spring 2014-Spring2016

Alternate, Facutly-Student senate, fall 2012-2014

Adviser, IEEE Student Organization

Reviewer IEEE Real World Engineering Projects, fall 2013