

Asif Salekin

<https://asalekin.github.io/>

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EXPERIENCE

SYRACUSE UNIVERSITY | Tenure Track Assistant Professor
Department of Electrical Engineering and Computer Science
August 2019 - Now | Syracuse, New York, USA.

SUNY Upstate Medical University | Voluntary Faculty Assistant Professor
Department of Psychiatry
May 2020 - Now | Syracuse, New York, USA.

NOKIA BELL LABS | Research Intern
BHAG Realization Lab
June 2018 - Aug 2018 | Murray hill, New Jersey, USA.

BOSCH RESEARCH AND TECHNOLOGY CENTER | Research Intern
Human-Machine Interaction Lab | Audio Analytics and Deep Learning
May 2017 - Oct 2017 | Palo Alto, California, USA.

EDUCATION

UNIVERSITY OF VIRGINIA | PhD in Computer Science
Advisor: Professor John A. Stankovic | August 2019

UNIVERSITY OF VIRGINIA | Masters of Computer Science (MCS)
May 2016

RESEARCH INTERESTS

Pervasive and Ubiquitous Computing, Internet of Things (IoT), Machine Learning, Cyber Physical Systems (CPS), Wireless, Connected and Mobile Health.

AWARDS

IAAI Deployed Application Award, The Thirty-Third Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-21).

Graduate Student Award for Outstanding Research, UVA Department of Computer Science, 2018

Nominated for best paper award, (AsthmaGuide) at Wireless health, 2016

Selected for Third Annual Public Days Showcase Event

The Public Days showcase highlights exemplary scholarship, research, and creative work of the University's undergraduate and graduate students, as well as post-docs. Our project, AsthmaGuide, was selected to represent the highest achievements of scholarship, research, and creative work from undergraduate and graduate students across Grounds.

Student Travel Award: SenSys Student Grant, NSF, 2015, and Wireless Health Travel Grant, NIH, 2014

FUNDING AND GRANTS

Title: Collaborative Research: SCH: Psychophysiological Sensing to Enhance Mindfulness-Based Interventions for Self-Regulation of Opioid Cravings

Supporting agency: National Science Foundation (NSF) Medium

PI: **Asif Salekin** (Lead PI)

Co-PI: Dessa Bergen-Cico

Total budget amount (Syracuse University): \$756,356

Asif Salekin budget: \$451,000

Performance period: 2022-2025

This project focuses on developing and testing innovative technologies to aid sustainable recovery of opioid use disorders by in-home craving and psychological cues monitoring and generation of adaptive, personalized, and just-in-time mindfulness-based interventions (MBIs).

Title: CPS: Small: Developing a Socio-Psychological CPS for the Health and Wellness of Dairy Cows.

Supporting agency: National Science Foundation (NSF) Small

PI: Sucheta Soundarajan

Co-PI: **Asif Salekin**

Total budget amount (Syracuse University): \$500,000

Asif Salekin: 40%, Two PIs 40%-40%, addition 20% consultants

Performance period: 2022-2025

This project focuses on building a cyber-physical system that integrates the social interactions of dairy cattle with other biometric data, develop predictive models that use such data to perform early identification of sick or vulnerable cattle, and create algorithms to provide adaptive interventions to the cattle farmers.

Title: Intensive Speech Motor Chaining Treatment and Artificial Intelligence Integration for Residual Speech Sound Disorders (most recent)

Supporting agency: NIH R01: NIDCD Low Risk Clinical Trials in Communication Disorders

Award Document # RDC020959A

Status: Reviewed 9 percentile, most likely to get funded.

PI: Jonathan L Preston

Co-investigator: **Asif Salekin**

Asif Salekin budget: Direct cost \$189,975 (Asif's total budget \$304,000)

Performance period: 2023-2027

Speech sound disorder (SSD) is the most common communication impairment treated by speech-language pathologists (SLPs). About 25% of preschoolers with SSD retain misarticulations as adolescents on /r, s, z/ due to ineffective treatment or barriers limiting access to SLPs. The project aims to develop automated motor-based assessment and treatment for residual SSD (RSSD).

Title: The influence of contextual and constitutional emotional processes on speech motor control and speech motor learning in early childhood stuttering, Inst. no. SP-31861-2

Supporting agency: 1R21DC018103-01A, National Institute on Deafness & Other Communication Disorders/NIH/DHHS

PI: Victoria Tumanova

Co-investigator: **Asif Salekin**

Total Direct Costs (Syracuse University): \$275,000

Performance period: 03/2021-02/2023

The goals of this project are to advance the understanding of stuttering development in preschool-age children and inform future fluency treatment. Specifically, the researchers are interested in how different aspects of emotional reactivity influence children's speech motor control and speech motor learning.

Title: Biofeedback-Enhanced Treatment for Speech Sound Disorder: Randomized Controlled Trial and Delineation of Sensorimotor Subtypes.

Supporting agency: NIH R-01, 2021 - The Artificial Intelligence/Machine Learning administrative supplement award.

Co-investigator: **Asif Salekin**

Total Direct Costs (Syracuse University): \$100,000

Performance period: 08/2021-07/2022

Title: Developing a Clinical Speech Recognition System for Childhood Speech Disorders

Supporting agency: Syracuse University Collaboration for Unprecedented Success and Excellence (CUSE)

PI: Jonathan L Preston

Co-PI: **Asif Salekin**

Project Period: 2021-2023

Total Direct Costs: \$22,000

The goal of the project is to develop an automated software platform for accurate classification and feedback of children's articulation errors. It has high significance and impact for potentially improving the ability to effectively improve a speech sound error (/r/) that is challenging to remediate.

PEER REVIEWED FULL PAPERS | PUBLISHED

Genomic Machine Learning Meta-regression: Insights on Associations of Study Features with Reported Model Performance

Eric Barnett, Daniel G Onete, Asif Salekin, Stephen V Faraone

Oxford Bioinformatics , 2022 (Minor revision), Leading journal of bioinformatics with impact factor 6.937.

Psychophysiological Arousal in Young Children Who Stutter: An Interpretable AI Approach

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) , 2022. (UbiComp 2022) (csrcrankings listed leading conference)

Harshit Sharma, Yi Xiao, Victoria Tumanova, **Asif Salekin**

* Asif Salekin is the corresponding author.

Combating False Data Injection Attacks on Human-Centric Sensing Applications

Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) , 2022. (UbiComp 2022) (csrcrankings listed leading conference)

Jingyu Xin, Vir V. Phoha, **Asif Salekin**

* Asif Salekin is the corresponding author.

PERCEPT-R: An Open-Access American English Child/Clinical Speech Corpus Specialized for the Audio Classification of /ɹ/

Proc. Interspeech 2022.

Nina Benway, Jonathan L. Preston, Elaine Hitchcock, **Asif Salekin** , Harshit Sharma and Tara McAllister

Evaluation of individual and ensemble probabilistic forecasts of COVID-19 mortality in the US

The Proceedings of the National Academy of Sciences USA (PNAS) , 2022.

(One of the most prestigious general-science journals. Impact factor 12.78.)

Cramer et al. (Asif Salekin is one of the authors)

Hyperspectral Image Super-Resolution in Arbitrary Input-Output Band Settings

In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (pp. 749-759).

Zhang, Z., Xu, Z., Ahmed, Z., **Salekin, A.** , Rahman, T.

Emotion Recognition Robust to Indoor Environmental Distortions and Non-targeted Emotions Using Out-Of-Distribution Detection.

ACM Transactions on Computing for Healthcare, 2021.

Y. Gao, **A. Salekin** , K. Gordon, K. Rose, H. Wang, J. Stankovic

Understanding autism: the power of EEG harnessed by prototypical learning.

Proceedings of the Workshop on Medical Cyber Physical Systems and Internet of Medical Things. 2021.

Asif Salekin and Natalie Russo.

* Asif Salekin is the corresponding author.

HirePreter: A Framework for Providing Fine-grained Interpretation for Automated Job Interview Analysis

In 2021 9th International Conference on Affective Computing and Intelligent Interaction Workshops (ACIIW). IEEE.

Wasifur Rahman, Sazan Mahbub, **Asif Salekin** , Md Kamrul Hasan and Ehsan Hoque.

Preclinical Stage Alzheimer's Disease Detection Using Magnetic Resonance Image Scans

The Thirty-Third Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-21) . (csrcrankings listed leading conference)

Fatih Altay, Guillermo Ramón Sánchez, Yanli James, Stephen V. Faraone, Senem Velipasalar, **Asif Salekin** .

* Asif Salekin is the corresponding author.

Exploring Inherent Sensor Redundancy for Automotive Anomaly Detection

The 57th Design Automation Conference (DAC 2020) . (csrcrankings listed leading conference)

Tianjia He, Lin Zhang, Fanxin Kong, and **Asif Salekin** .

* Asif Salekin is the corresponding author.

A Real-Time Audio Monitoring Framework with Limited Data for Constrained Devices

The 15th International Conference on Distributed Computing in Sensor Systems (DCOSS 2019) .

A. Salekin , S. Ghaffarzadegan, Z. Feng, and J. Stankovic

* Asif Salekin is the first author.

ARASID: Artificial Reverberation-Adjusted Indoor Speaker Identification Dealing with Variable Distances

International Conference on Embedded Wireless Systems and Networks (EWSN), 2019.

Z. Chen, M. Ahmed, **A. Salekin** , J. Stankovic

A Weakly Supervised Learning Framework For Detecting Social Anxiety And Depression

ACM Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT), Vol. 2, Issue. 2 (UbiComp 2018) . (csrcrankings listed leading conference)

A. Salekin , J. Eberle, J. Glenn, B. Teachman, J. Stankovic

* Asif Salekin is the first author.

Distant Emotion Recognition

ACM Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT), Vol. 1, Issue. 3 (**Ubicomp 2017**) . (csrankings listed leading conference)

A. Salekin , Z. Chen, M. Ahmed, J. Lach, D. Spruijt-Metz, K. Haye, B. Bell, J. Stankovic

* Asif Salekin is the first author.

DAVE: Detecting Agitated Vocal Events

IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering technologies (CHASE), 2017.

A. Salekin , H. Wang, K. Williams, J. Stankovic

* Asif Salekin is the first author.

AsthmaGuide: An Asthma Monitoring and Advice Ecosystem

IEEE Wireless Health 2016. (**Nominated for best paper**)

Co-first authors (**A. Salekin** , H. Ra), H. Yoon, J. Kim, S. Nirjon, D. Stone, S. Kim, J. Lee, S. Son and J. Stankovic

* Asif Salekin is the first author.

Detection of Chronic Kidney Disease and Selecting Important Predictive Attributes

IEEE International Conference on Healthcare Informatics (ICHI), 2016.

A. Salekin , J. Stankovic

* Asif Salekin is the first author.

MOBI-COG: A Mobile Application for Instant Screening of Dementia Using the Mini-Cog Test

Wireless Health 2014.

S. Nirjon, I. Emi, A. Mondol, **A. Salekin** , and J. Stankovic

Extracting and Ranking Web Communities

International Conference on Web Intelligence, Mining and Semantics (WIMS), 2013.

A. Salekin , J. Tabassum, M. Hasan

* Asif Salekin is the first author.

A Novel Approach for Constructing Emulator for Microsoft Kinect XBOX 360 Sensor in the .NET Platform

International Conference on Intelligent Systems, Modelling and Simulation (ISMS), 2013.

MD. Rahman, S. Rahman, R. Hasan, R. Noel, **A. Salekin** , H. Ferdous

A Novel Clustering-Based Ensemble Classification Model for Block Learning

International Conference on Pattern Recognition Applications and Methods (ICPRAM), 2013.

MD. Rahman, MD. Rahman, **A. Salekin** , S.H. Chowdhury, S.A. Anik

A Novel Approach for Generating Clustered Based Ensemble of Classifiers

International Journal of Machine Learning and Computing, Vol. 3, Issue. 1, Page 137, 2013.

MD. Rahman, MD. Rahman, **A. Salekin** , A.S. Andalib

Composite Pattern Matching in Time Series

International Conference on Computer and Information Technology (ICCIT), 2012.

A. Salekin , M. Islam, MD. Rahman

* Asif Salekin is the first author.

Pattern matching in time series using combination of neural network and rule based approach

International Conference on Electrical and Computer Engineering (ICECE), 2012.

A. Salekin , MD. Rahman

* Asif Salekin is the first author.

Novel approaches for detecting fabric fault using artificial neural network with k-fold validation

International Conference on Computer and Information Technology (ICCIT), 2012.

A.S. Andalib, **A. Salekin** , M.R. Islam, M. Abdulla-Al-Shami

PEER REVIEWED FULL PAPERS | SUBMITTED

Psychophysiology-aided Hyper-Network based Nonlocal Speech Analysis of Children Who Stutter

The Paper is under review (2nd phase) in AAAI 2023

* Asif Salekin is the corresponding author.

PATENT

System And Method For Audio Event Detection In Surveillance Systems

A. Salekin , S. Ghaffarzadegan, Z. Feng (2019)

U.S. Patent Application No. 16/976,462.

POSTERS AND DEMOS

I Can Hear it in Your Voice: A Weakly Supervised Machine Learning Framework for Detecting Social Anxiety and Depression Symptoms from Features of Speech

ABCT's 52nd Annual Convention, 2018.

A. Salekin , J. Eberle, J. Glenn, B. Teachman, J. Stankovic

Poster Abstract: LifeMaps - An Automated Diary System Based on the Structure of Lives

SenSys, 2016.

A. Mondol, H. Ra, **A. Salekin** , H. Yoon, M. Kubovy, S. Son, J. Stankovic

Poster Abstract: Software architecture for efficiently designing cloud applications using node.js

14th Annual International Conference on Mobile Systems, Applications, and Services Companion, 2016.

H. Ra, H. Yoon, **A. Salekin** , J. Lee, J. Stankovic, S. Son

Demo Abstract: KinVocal: Detecting Agitated Vocal Events

SenSys, 2015.

A. Salekin , H. Wang, J. Stankovic

Demo Abstract: AsthmaGuide: An Ecosystem for Asthma Monitoring and Advice

SenSys, 2015.

H. Ra, **A. Salekin** et al.

A natural user interface classroom based on Kinect

IEEE Learning Technology Newsletter, Volume 13, October 2011.

R. Noel, **A. Salekin** , R. Islam, S. Rahaman, R. Hasan, H.S. Ferdous

MENTORING EXPERIENCE

Supervising six doctoral Students.

Supervising four master's Students.

Supervised six Master's student for Internship Credit (CIS 670).

Supervising two undergrad students in research.

Undergraduate student advisor for 27 undergraduate students.

Hosted and supervised one K 12 student in the summer of 2022.

TEACHING EXPERIENCE

Instructor

Course: Graduate Level Design and Analysis of Algorithm (CIS 675)

Fall 2022 (170 Students)

Fall 2021 (75 Students): Student Feedback: 4.25/5.

Fall 2020 (32 Students): Student Feedback: 4.14/5.

Fall 2019 (128 Students): Student Feedback: 3.89/5.

Instructor

Course: Undergrad Level Design and Analysis of Algorithm (CIS 477)

Spring 2022 (30 Students): Student Feedback: 4.68/5.

Instructor

Course: Instructor: Ubiquitous Computing (CIS 700)

Spring 2021 (12 Students): Student Feedback: 4.5/5.

Spring 2022 (11 Students): Student Feedback: 4.65/5.

Instructor

Course: Machine Learning for IoT Applications (CIS 700)

Spring 2020 (10 Students): Student Feedback: 4.24/5.

Instructor

Course: Undergraduate Level Design and Analysis of Algorithm (CIS 477)

Spring 2022 (26 Students)

Instructor

Course: ML Nanocourse series, 2020.
Two lectures on Machine Learning for Health.
SUNY Upstate Medical University

Invited lecturer: Two lectures on Machine Learning for IoT and CPS

Course: The Internet of Trillions of Things (Graduate level), UVA, Fall 2018

Invited lecturer: A lecture on Smart Connected Health

Course: Wireless Sensor Networks (Undergraduate level), UVA, Fall 2014

Mentoring (Graduate level)

Two first year PhD students (2015, 2017)
Three Masters students (2014, 2016, 2018)

Graduate Teaching Assistant

Course: Algorithm
UVA, Fall, 2013 and Spring, 2014
Hold office hours and graded homework and exams for over 300 students

Lecturer

Ahsanullah University of Science and Technology (AUST), 2012-2013
Courses: Algorithm, Network Programming, Operating Systems.
Responsibility: lecture planning, taught and instructed courses, assessing students, holding office hours, invigilating examinations

Lecturer

BRAC University (BRACU), 2012
Courses: Operating Systems, Introduction to Programming Language: Java.
Responsibility: lecture planning, taught and instructed courses, assessing students, holding office hours, invigilating examinations

SELECTED TALKS

Invited Talk: 'Understanding Autism: The Power of EEG Harnessed by Prototypical Learning'
Medical Cyber Physical Systems and Internet of Medical Things Workshop, 2021.

Invited Talk: 'Ubiquitous and human-centric computing in healthcare'
Research Exposure in Socially Relevant Computing (RESORC), Organized by Syracuse University in partnership with Google, 2021.

Invited Lecture: 'Adaptive Machine Learning for Human-Centric IoT Applications'
IEEE Syracuse Section
Engineering in Medicine and Biology Society Chapter Event, 2020

Invited Talk: 'Machine Learning for Constrained Devices with Limited Training Data'
University of Rochester, 2019

Invited Talk: 'Adaptive Machine Learning for IoT'
Indiana University, Bloomington, 2019

Invited Talk: 'Adaptive Machine Learning for IoT'
Florida State University, 2019

Workshop Presentation: 'Machine Learning for Constrained Devices with Limited Training Data'
International Workshop on NEXT-GENERATION CYBER-PHYSICAL SYSTEMS, 2018

Invited talk 'Human Machine Interaction', **BR Lab, Nokia Bell Labs**, NJ, USA, 2018

Invited talk 'Machine Learning for IOT and CPS', **ENSA Lab, Nokia Bell Labs**, NJ, USA, 2018

Full Paper Presentation 'Distant Emotion Recognition', **Ubicomp**, 2017

Full Paper Presentation 'Detecting Agitated Vocal Events', IEEE CHASE, July 2017

Invited talk 'Novel Feature Modeling for Audio Analytics', **BOSCH Research and Technology Center**, CA, USA, 2017

Poster Presentation 'LifeMaps - An Automated Diary System Based on the Structure of Lives', **Sensys**, 2016

The Public Days showcase event 'AsthmaGuide : A Complete Asthma Monitoring System', 2016

Full Paper Presentation 'AsthmaGuide: A smartphone and cloud based asthma system', IEEE Wireless Health 2016

Full Paper Presentation 'Chronic kidney disease detection', IEEE ICHI, 2016

Poster and Demo Presentation 'Detecting Agitated Vocal Events', **SenSys** , 2015

Poster and Demo Presentation 'AsthmaGuide: An Ecosystem for Asthma Monitoring and Advice', **SenSys** , 2015

Project Demonstration UVA Open House, 2014, 2015, 2016, 2017

REFeree/REVIEWER

Associate Editor Journal: ACM Transactions on Computing for Healthcare

PC member AAAI 2022, 2023, CVPR 2021

TCP member PerIoT 2020 and 2021

Reviewer:

IMWUT (UbiComp) 2017, 2018, 2019, 2020, 2022

ACM Transactions on Cyber-Physical Systems 2019

IFIP Performance 2018

ISSRE 2018

Heliyon 2018

DSN 2019

NSF: SERVICE

Served on the Phase I: Big Data and Advanced Analytics (Virtual) SBIR review panel.

Served on NSF Multimodal Sensor Systems for Precision Health Enabled by Data Harnessing, Artificial Intelligence, and Learning (SenSE) panel.

Served on NSF Smart and Connected Health (SCH) panel.

SYRACUSE UNIVERSITY: SERVICE

Served on the CUSE grant review panel (2020)

Developed one position for the second round of cluster hiring competition in Aging, Health, and Neuroscience.

Acting as an undergraduate student advisor for 30+ undergraduate students.

Contributed as a part of CISE and ECE QE1 exam 2020, 2021, 2022 (PhD Qualifying examination) committee, PhD proposal, and PhD defense committees.

VOLUNTEERING EXPERIENCE

Student Volunteer : Wireless Health 2014, UVA Engineering Alumni Reunions 2014, Hosting Faculty Candidates (2015 & 2016), BUET CSE Festival (2008 & 2011), Bangladesh National Math Olympiad 2008

Co-founder and General Secretary : Association of Bangladeshi Students UVA, 2016-2017

Community Action : Mentored two underprivileged students in their studies, 2014-2016