# Asif Salekin

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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)** (csrankings 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)** (csrankings 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)** . (csrankings 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)** . (csrankings 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)** . (csrankings 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 basedNonlocal 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.

Link: https://patents.google.com/patent/US20210005067A1/en

## 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