Sreenivasan Ramasamy Ramamurthy

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Research Interests

Mobile Computing, Machine Learning, Cyber-physical Systems, Internet of Things

Current Appointments

Assistant Professor, August 2022 – present
Department of Computer Science
Bowie State University

Education

Ph.D., Information Systems, 2022
University of Maryland, Baltimore County, Baltimore, USA
Advisor: Prof. Nirmalya Roy
Thesis: Counterfactual Verified Semi-Supervised Learning Framework for Older Adults' Functional and Cognitive Health Assessment

Master of Technology, Biomedical Engineering, 2016
Vellore Institute of Technology, Vellore, India

Bachelor of Technology, Electronics and Instrumentation Engineering, 2012
Amrita Vishwa Vidyapeetham, Coimbatore, India

Grants

Role: PI, Systems Modelling for Cybersecurity, Sep'21 – Apr'23
NAVAIR AirTalent UG Capstone Project Grant ($15,000)

Role: Co-I, Self-Adaptive Autonomous Systems, Nov'22 - May'24
ArtIAMAS - Cooperative Agreement between University of Maryland and Army Research Lab ($236,375)

Teaching

Instructor (2 sections), Spring 2023, Bowie State University
COSC112 - Computer Science II (Advanced Java Programming)

Instructor (2 sections), Fall 2022, Bowie State University
COSC112 - Computer Science I (Introduction to Java Programming)

Grader/Teaching Assistant, Spring 2021, UMBC
IS733 - Data Mining

Conference Publications

CHARLIE: A Chatbot that Recommends Daily Fitness and Diet Plans
Deepanjali Chowdhury, Ahana Roy, **Sreenivasan Ramasamy Ramamurthy**, Nirmalya Roy
(To appear) TELMED Workshop (co-located with IEEE PerCom), 2023.

PerMTL: A Multi-Task Learning Framework for Skilled Human Performance Assessment
Indrajeet Ghosh, **Sreenivasan Ramasamy Ramamurthy**, Avijoy Chakma, Nirmalya Roy, Nicholas Waytowich.
IEEE ICMLA 2022.

CogAx: Early Assessment of Cognitive and Functional Impairment from Accelerometry
Sreenivasan Ramasamy Ramamurthy, Soumyajit Chatterjee, Elizabeth Galik, Aryya Gangopadhyay, Nirmalya Roy, Bivas Mitra, Sandip Chakraborty.
IEEE PerCom 2022.
***Acceptance Rate ≈ 10.67%**

SpecTextor: End-to-End Attention-based Mechanism for Dense Text Generation in Sports Journalism
Matthew Ivlar, Indrajeet Ghosh, **Sreenivasan Ramasamy Ramamurthy**, Nirmalya Roy.
SmartSys Workshop (co-located with IEEE SmartComp), 2022.

RhythmEdge: Enabling Contactless Heart Rate Estimation on the Edge.
Zahid Hasan, Emon Dey, **Sreenivasan Ramasamy Ramamurthy**, Nirmalya Roy, Archan Misra.
IEEE SmartComp, 2022.
***Best Paper Award**

STAR: A Scalable Self-taught Learning Framework for Older Adults' Activity Recognition
Sreenivasan Ramasamy Ramamurthy, Indrajeet Ghosh, Aryya Gangopadhyay, Elizabeth Galik, Nirmalya Roy.
IEEE SmartComp, 2021.

StanceScorer: A Data Driven Approach to Score Badminton Player
Indrajeet Ghosh, **Sreenivasan Ramasamy Ramamurthy**, Nirmalya Roy.
Wristsense Workshop (Co-located with IEEE PerCom), 2020.

HappyFeet: Recognizing and Assessing Dance on the Floor.
Abu Zaher Md Faridee, **Sreenivasan Ramasamy Ramamurthy** (*co-primary), H M Sajjad Hossain, and Nirmalya Roy.
ACM HotMobile, 2018.

Nair BB, Patturajan M, Mohandas VP, **Sreenivasan R.R.**. Predicting the BSE Sensex: Performance comparison of adaptive linear element, feed forward and time delay neural networks. In Power, Signals, Controls and Computation
IEEE (EPSCICON), 2012

Journal Articles

Sports Analytics Review: AI Applications, Emerging Technologies and Algorithmic Perspective
Indrajeet Ghosh, **Sreenivasan Ramasamy Ramamurthy**, Avijoy Chakma, Nirmalya Roy
(In Press) WIREs Data Mining and Knowledge Discovery, 2023.
***Impact factor ≈ 7.558**

STAR-Lite: A lightweight Scalable Self-taught Learning Framework for Older Adults' Activity Recognition
Sreenivasan Ramasamy Ramamurthy, Indrajeet Ghosh, Aryya Gangopadhyay, Elizabeth Galik, Nirmalya Roy.
Elsevier Pervasive and Mobile Computing, 2022.
***Impact factor ≈ 3.848**

DeCoach: Deep Learning-based Coaching for Badminton Player Assessment
Indrajeet Ghosh, **Sreenivasan Ramasamy Ramamurthy**, Avijoy Chakma, Nirmalya Roy.
Elsevier Pervasive and Mobile Computing, 2022.
***Impact factor ≈ 3.848**

CamSense: A Camera-Based Contact-less Sensing Platform for Monitoring Heart Activity
Zahid Hasan, **Sreenivasan Ramasamy Ramamurthy**, Nirmalya Roy.
Elsevier Smart Health, 2021.

HappyFeet: Challenges in Building an Automated Dance Recognition and Assessment Tool
Abu Zaher Md Faridee, **Sreenivasan Ramasamy Ramamurthy** and Nirmalya Roy.
ACM The (Almost) Unpublishable Results. (GetMobile), 2018

Recent Machine Learning Trends in Human Activity Recognition – A Survey
Sreenivasan Ramasamy Ramamurthy and Nirmalya Roy
WIREs Data Mining and Knowledge Discovery, 2018.
***Impact factor ≈ 7.558**

An Active Sleep Monitoring Framework Using Wearables
H M Sajjad Hossain, **Sreenivasan Ramasamy Ramamurthy**, Md Abdullah Al Hafiz Khan, and Nirmalya Roy.
ACM Transactions on Interactive Intelligent Systems, 2018.
***Impact factor ≈ 2.137**

Manuscripts in Preparation

CFAct: Counterfactual Explanation of Deep Activity Recognition Models for Older Adults with Cognitive Impairment
Sreenivasan Ramasamy Ramamurthy, and Nirmalya Roy

HeteroSys: Heterogeneous and Collaborative Sensing in the Wild
Indrajeet Ghosh, Adam Goldstein, Avijoy Chakma, Jade Freeman, Timothy Gregory, Niranjan Suri, **Sreenivasan Ramasamy Ramamurthy**, Nirmalya Roy.

Posters & Demos

Demo: RhythmEdge: Enabling Contactless Heart Rate Estimation on the Edge
Zahid Hasan, Emon Dey, **Sreenivasan Ramasamy Ramamurthy**, Nirmalya Roy, Archan Misra.
IEEE SmartComp, 2022.

Poster: HappyFeet: Recognizing and Assessing Dance on the Floor.
Abu Zaher Md Faridee, **Sreenivasan Ramasamy Ramamurthy** (*co-primary), H M Sajjad Hossain, and Nirmalya Roy.
ACM HotMobile, 2018.

Field Experience and Datasets

Designed and led the activity data collection experiment for 25 participants at a continuing care retirement community at individual houses for longitudinal functional and behavioral health assessment.

MPSC-rPPG Dataset
Zahid Hasan, **Sreenivasan Ramasamy Ramamurthy**, Nirmalya Roy.
IEEE Dataport, 2021.

Badminton Activity Recognition (BAR) Dataset
Indrajeet Ghosh, **Sreenivasan Ramasamy Ramamurthy**, Avijoy Chakma, Emon Dey, Zahid Hasan, Nirmalya Roy.
IEEE Dataport, 2020.

Programming Skills

Python (sklearn, pytorch, tensorflow, tensorflow-lite), MATLAB, C, C++, and Shell Scripting, RTOS, ROS

Research and Work Experience

Graduate Research Assistant, January 2017 - August 2022
Mobile, Pervasive and Sensor Computing Lab
University of Maryland Baltimore County, Baltimore, USA

- Build sensor system using wearables and ambient sensors to efficiently capture the activities of older adults for early detection of onset of Alzheimer's disease and further track the progression of the disease.
- Study the relationship between human activities and underlying functional/behavioral/cognitive health.

Graduate Research Assistant, May 2021 - August 2022
Center for Distributed Sensing and Autonomy
University of Maryland Baltimore County, Baltimore, USA

- Design Inter-operable, Fault Tolerant Communication, Collaborative Sensing and Resource Optimized Networks in Contested Environments for Civilian and Military Applications.

Junior Research Fellow, October 2016 - November 2016
Indian Institute of Technology Bombay, India

- Preliminary study to design an interfacing circuit for a tactile sensor array and to display a color map of the pressure applied on the tactile sensor array using MATLAB.
- Developed an interfacing software to connect an Arduino board with an Electrocardiogram circuit and to a computer. Developed a MATLAB code

to view, analyze the ECG signals and perform correlation studies to compare the signals obtained from different electrode materials.

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Visiting Researcher, December 2015 - April 2016
The University of Adelaide, Adelaide, Australia

- Study of developing virtual application specific integrated circuit (ASIC) that mimics the ASIC prototype such that the fall prediction algorithm can be test on the virtual platform.
- Developed a fall detection algorithm using statistical methods.

Executive – Projects, June 2012 - June 2014
Mytrah Energy (India) Ltd, Hyderabad, India

- In charge of planning and execution of 33 KV electrical systems for a 100 MW wind farm project.

Current Students and Dissertation Committees

Current Students

- Graduate Students
  - Staphord Eliphace Bengesi,
  - Starfranklyn Obieze Olivers
- Undergraduate Students
  - Michael Lewis Stewart
  - Micah James Alexander

NSF-REU in Smart Computing and Communications Mentor Summer 2022

- Adam Goldstein (Co-Mentor), HeteroSys: Heterogeneous and Collaborative Sensing in the Wild

NSF-REU in Smart Computing and Communications Mentor Summer 2021

- Deepanjali Chowdhury (Mentor), CHARLIE: Chatbot to recommend fitness and diet plans.
- Matthew Ivlar (Co-Mentor), SpecTextor: Dense Automated Text Generator for Sports News Articles.

Graduate Student Mentor Fall 2018 - Summer 2020

- Indrajeet Ghosh, Thesis: DeepMinton: Analyzing Stance and Stroke to Rank Badminton Players

Dissertation Committees:

- Title: Building an Intelligent Framework Using a Novel Combination of Ensemble Classification to Predict Heart Disease
  D.Sc. Candidate: Abdullah Algahtani

- Title: Generating 3D Facial Models from Single-view Facial Images in the Wild using Deep Learning Networks
  D.Sc. Candidate: Mahfoudh Mohammad Batarfi

Awards & Honors

Best Paper Award (IEEE CHASE 2022)

NSF Student Travel Award

- IEEE SmartComp 2021, ACM/IEEE CHASE 2021.

Student Travel Award

- ACM HotMobile 2018

Activities & Services

Peer-reviewer

- Elsevier Pervasive and Mobile Computing, Cognitive Systems Research, Embedded Computing Systems, Parallel Computing, SMARTCOMP'19, IE'18, AAAI'23

Technical Program Committee co-chair

- SmartSys 2023

Technical Program Committee

- COMSNETS 2023 Graduate Forum

Web Co-chair

- SmartComp 2019

Publicity Co-chair

- SmartSys 2018, SmartSys 2017

Local Organizing Student Co-chair

- WoWMoM 2019, SmartComp 2019

Media Coverage

NewScientist, March'18. Check it out: Automated dance teacher tells you when your moves are wrong.