

# Abhishek Kumar Mishra

## Contact

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## Research Area

**AI in Healthcare, Spiking Neural Network, Machine Learning, Fault tolerance, Semiconductor Wafer Defect, Natural Language Processing**

## Education

- Aug 2020 – **Ph.D. in Electrical Engineering**, *Drexel University*, Philadelphia, PA, *GPA – 4.0/4.0*  
Dec 2024 Advisors: [Dr. Nagarajan Kandasamy](#), [Dr. Anup Das](#)
- Aug 2018 – **MS in Computer Science**, *University at Buffalo*, Buffalo, NY, *GPA – 3.51/4.0*  
Jul 2020 Advisor: [Dr. David Doermann](#)
- Aug 2011 – **B.Tech in Electronics & Communication Engineering**, *RCCIT*, Kolkata, India  
Jul 2015

## Work Experience

- Feb 2022 – **Graduate Data Science Intern**, *Intel Corporation, MPE MDNA Team*, Austin, TX, USA  
Jul 2022
  - Built machine learning models using semiconductor test parametric data to reduce yield loss.
  - Created an end-to-end pipeline for pulling the data, pre-processing, training, and predicting.
  - Our work was published in VTS 2023.
- May 2019 – **Research Intern**, *North Park Innovation Ltd*, Buffalo, NY, USA  
Dec 2019
  - Designed a pipeline for the multi-class classifier to find the cause of the malfunction of the HVAC system.
  - Developed an ANN model that surpassed malfunction detection, achieving a score of 81.35% macro precision & 80.21% macro recall.
- Sep 2015 – **Junior Data Scientist**, *Ericsson India Global Pvt. Ltd.*, Mumbai, MH, India  
Aug 2017
  - Predicted the network key performance indicator (KPI) for the client by developing a classification model based on the historical data for improvement and degradation of the network.
  - Implemented a supervised learning model for anomaly detection based on alarms, capturing unusual base station behavior. This reduced alarms by 30% and enabled early fault prediction and proactive decision-making.
  - Implemented a logistic regression model to diagnose weak network connections, identifying key features. This approach improved prediction accuracy by 10% compared to the previous year.
  - Created interactive Dashboards and visualizations for descriptive analysis.

## Teaching

- Sep 2020 – **Teaching Assistant**, *Drexel University*, Philadelphia, PA  
Dec 2024
  - Held office hours and graded homework, tests, and quizzes for courses:
  - ECE 613: Neuromorphic computing (Currently)
  - ECE 350: Introduction to Computer Organization (Fall 2020, Summer 2021, Fall 2022)
  - ECE 200: Digital Logic Design (Summer 2021)

Jan 2020 – **Teaching Assistant**, *University at Buffalo*, Buffalo, NY

- Apr 2020 ○ Held weekly recitations and office hours and graded homework, tests, and quizzes for the course:
- EAS 595LEC: Fundamentals of Artificial Intelligence (Spring 2020)

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## Publications

See my [Google Scholar](#) page for recent updates and citation information.

- Ubicomp- ISWC 2024 **GLUmos: Noninvasive Glucose Monitoring Using a Wearable Spectroscopy Device.** Anush Niranjana, **Abhishek Kumar Mishra**, Tarek Hamid, Claire Kendell, Junpeng Zhao, Jacob Brenner, Nagarajan Kandasamy, Amanda Watson (Recently accepted)
- IJCAI 2024 **Drug Overdose Vital-Signs Evaluator using Machine Learning.** Anush Niranjana, **Abhishek Kumar Mishra**, Suman Kumar, David Gordon, Jacob Brenner, Nagarajan Kandasamy, Amanda Watson (Recently accepted)
- MWSCAS 2024 **A Fully-Configurable Digital Spiking Neuromorphic Hardware Design with Variable Quantization and Mixed Precision.** Shadi Matiniazadeh, Arghavan Mohammadhassani, Noah Pacik-Nelson, Ioannis Polykretis, **Abhishek Mishra**, James Shackleford, Nagarajan Kandasamy, Eric Gallo, Anup Das (Recently accepted)
- ICONS 2024 **Neuromorphic Computing for the Masses.** Shadi Matiniazadeh, Arghavan Mohammadhassani, Noah Pacik-Nelson, Ioannis Polykretis, Krupa Tishbi, Suman Kumar, M. L. Varshika, **Abhishek Kumar Mishra**, Nagarajan Kandasamy, James Shackleford, Eric Gallo, Anup Das (Recently accepted)
- VTs 2024 **WaferCap: Open Classification of Wafer Map Patterns using Deep Capsule Network.** **Abhishek Mishra**, Mohammad Ershad Shaik, Anush Lingamoorthy, Suman Kumar, Anup Das, Nagarajan Kandasamy, Nur A. Toubia
- VTs 2023 **Predicting the Silent Data Error Prone Devices Using Machine Learning.** Mohammad Ershad Shaik, Abhishek Kumar Mishra, Yonghyun Kim
- ETS 2023 **Online Performance Monitoring of Neuromorphic Computing Systems.** Abhishek Kumar Mishra, Anup Das, Nagarajan Kandasamy
- ASPDAC 2023 **Hardware-Software Co-Design for On-chip Learning in AI Systems.** M.L.Varshika, Abhishek Kumar Mishra, Nagarajan Kandasamy, Anup Das
- Electronics 2022 **Built-In Functional Testing of Analog In-Memory Accelerators for Deep Neural Networks.** Abhishek Kumar Mishra, Anup Das, Nagarajan Kandasamy
- RANLP 2021 **Does local pruning offer task-specific models to learn effectively?** Abhishek Kumar Mishra, Mohana Chakraborty

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## Academic Service

### Reviewer

- NeurIPS 2024
- IJCAI 2024
- IEEE J. Biomedical and Health Informatics 2024
- IJCNN 2024
- ACM TECS 2022, 2024
- Procedia Computer Science Journal 2023
- DAC 2022, 2023
- ICCAD 2021, 2022, 2023

- ASPDAC 2022
- DATE 2021, 2022
- Cases Journal 2021
- Computing Frontiers 2021
- NEUNET Journal 2020
- IEEE CONECCT 2020

#### Membership

- IEEE, IJCAI, ACM, AAI, Frontiers

#### Awards

Poster Presentation **IBM IEEE CAS/EDS – AI Compute Symposium, Oct 2022.** Selected to present the "IBM IEEE CAS/EDS – AI Compute Symposium 2022" poster.

#### Skills

Languages Python, C++, SQL, R, Matlab  
 Tools/IDE Jupyter, Visual Studio, Sublime, Tableau, Anaconda, AWS, Google Cloud Platform  
 Libraries & Frameworks NumPy, Pandas, scikit-learn, Matplotlib, Tensorflow, Keras, Pytorch, snnTorch, Dash, Scipy, Plotly, SpaCy, NLTK, VADER, TextBlob, Gensim, Beautiful Soup, Regex, Bokeh, Folium, Hadoop, MapReduce, Spark

#### Current Research Projects

- Running a massive study over 1k patients to gather physiological data to detect blood glucose concentrations noninvasively and manage diabetes using machine learning. The study aims to enhance continuous glucose monitoring and explore new opportunities for noninvasive health monitoring.
- Conducting a study, approved by IRB to collect opioid overdose data from different subjects for the early detection of opioid overdose using machine learning.
- Developing a Machine Learning framework for real-time monitoring of neuromorphic program execution using model-based redundancy. This software-based monitor detects discrepancies between hardware neuron behavior and predictions, reducing hardware overhead and minimizing intrusion on applications.

#### References

- **Dr. Nagarajan Kandasamy** – Professor (Advisor), Drexel University. Email: nk78@drexel.edu
- **Dr. Anup Das** – Associate Professor (Co-advisor), Drexel University. Email: ad3639@drexel.edu
- More references will be available upon request.