Debapriya Hazra

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Academic Qualifications

March 2019 – August 2022	**Doctor of Philosophy (PhD)**

Department of Computer Engineering, Machine Learning Lab.
JEJU NATIONAL UNIVERSITY, SOUTH KOREA
Degree Grade Point Average : 4.38 / 4.50
Excellent Academic Achievement Award

Sept 2012 – May 2015   **Master of Computer Application (MCA)**
RCC INSTITUTE OF INFORMATION TECHNOLOGY, WEST BENGAL UNIVERSITY OF TECHNOLOGY, INDIA
Degree Grade Point Average : 8.59 / 10

Aug 2009 – May 2012   **Bachelor of Science (B.Sc) in Computer Science Honours**
SETH ANANDRAM JAIPURIA COLLEGE, UNIVERSITY OF CALCUTTA, INDIA

Professional Experience

Postdoctoral Associate, **McGowan Institute for Regenerative Medicine, University of Pittsburgh**   **Feb 2024 – Present**

- Department : Department of Surgery (Dr Deeptankar DeMazumder Lab)
- Working on **Personalized Dynamic ECG Signal Analysis for Predicting Emergent Arrythmias and Spontaneous Sudden Cardiac Arrest**
- **Mentoring research tech and graduate students.**

Postdoctoral Fellow, **Stanford University, School of Medicine**   **Sept 2022 – Feb 2024**

- Department : Anesthesiology, Perioperative and Pain Medicine (AI in Medicine / Aghaeepour Laboratory)
- Worked on **Machine Learning Analysis of Biomedical Data (EHR)**. Mainly focused on **Generative** and **Predictive Modeling**
  - Generative Adversarial Networks (GAN)
  - Diffusion Models
- **Deep Learning-based Imaging Analysis** of Metabolomics Dataset for Precision Medicine
  - Data Analysis and Imputation
  - Raw Data to Image Conversion
  - Prediction / Classification Models

Researcher, **Jeju National University, Machine Learning Lab**   **March 2019 – August 2022**

- **Thesis**: Few-Shot Image Generation and Novel Deep Learning Model for Enhancing Classification of Microscopic Single-Cell Images Obtained from Peripheral Blood Smears
- Generating synthetic data using generative adversarial networks (GAN) and enhancing classification or prediction accuracy for disease diagnosis. Also worked on few-shot learning.
- Worked on biomedical signals, microbiomes, microscopic cell images, and nucleic acid sequences.

- Image classification, time-series data analysis, object & edge detection, image segmentation, image background recovery, ensemble models.
- Worked on industrial projects.
- Framework : **Pytorch**, **Tensorflow**, **Sckit-Learn**, **Keras**, etc.
- Programming Language : **Python**

Software Engineer, **Atos Global IT Solutions and Services Private Limited, India**   **June 2015 – Feb 2019**

Project Detail
- Competency : **Telecom**
- Project :
  E-Plus - Mobile telecommunications operator in Germany. With more than 25 million subscribers, E- Plus is the third largest mobile operator in Germany
  Telefonica - Spanish multinational broadband and telecommunications provider with operations in Europe, Asia, and North, Central and South America. It is one of the largest telephone operators and Mobile network providers in the world
- Domain : **Billing**
- Sub-domain : **Mediation**, **Fraud** and **CACS**

Development
- Work related to **Unix**, **SQL** & **PL/SQL** and **Shell Scripting** (developing scripts to automate the system and the monitoring process)
- Handling incidents and problems related to Mediation, Fraud and CACS

Configuration Management
- Performing month-end activities and configuration related to Partner Relationship Management (PRM). Implementing and working on Paid Service Requests

Transition and Transformation Phase
- Worked Onsite in Munich, Germany, for receiving knowledge and taking handover of 3 applications

Internship

Intern, **Tectes, Kolkata, India**   **November 2014– May 2015**

- Worked on a USA based client project (InstantCutz) on Hybrid Android phone application development that connects customers with the best barbers in town
- Android app (InstantCutz) was developed using MEAN (MongoDB, ExpressJS, AngularJS and Node.js) framework
- Work involved implementation of Backend related operations and UI design as per png templates provided by the client
- Front-end development was done using HTML5, CSS3, Bootstrap, Material Design, JavaScript and jQuery

Trainee

Unit Testing Trainee, **Tata Consultancy Services, Kolkata, India**   **June 2012– August 2012**

- Trained to work with software developers for trouble-shooting any developmental issues
- Implementing, executing and maintaining manual test cases
- Identifying defects and preparing testing documents.

Academic Projects

- **Title: Classification and Evaluation of Individual Bone Marrow Aspirate Smears Cell Types**
  Collaboration: Hanyang University Hospital, South Korea and EONE Laboratories, South Korea
  Period: December 2020 – August 2022
- **Title: Eliminate Objects Hiding the Roof, Recover Background and Detect Roof Edges for Solar Panel Installation**
  Funding: Ministry of Small and Medium-sized Enterprises (SMEs) and Startups (MSS), South Korea
  Period: March 2019 – June 2020
- **Title: e-Auction**
  Period: June – November 2014
  Team Size: 3
- **Title: Hospital Management System**
  Period: January – June 2012
  Team Size: 3

Certifications

- **Oracle Certified Associate, Java SE 7 Programmer**, Bangalore, India. September 2015, Score: **95%**.
- **1Z0-051 Oracle Database 11g:SQL Fundamentals I**, Oracle Certification, Bangalore, India. August 2015, Score:**94%**.

Workshop

- 2 days' Workshop on **Matlab** Using Image Processing at **Indian Institute of Technology (IIT)**, Delhi, India in October 2016.
- July 14 – August 3, 2019, **Jeju National University**, South Korea, **Asian University Machine Learning Camp** (UMLC2019)

Awards and Achievements

- **Best Paper Award** for "**Generating Synthetic Fermentation Data of Shindari using Generative Adversarial Networks**", **KIIT Conference, South Korea**, June 2021
- **Certificate of Excellence** for "**Excellent contribution towards successful completion of transition for Mediation and Fraud applications**" in Telefonica RUN Project by Atos.
- Awarded **"The London School of Training (LST) Associate Membership"** for **presentation skills and proficiency in both written and spoken English**, April 2014
- Ranked **151** out of approximately 5000 students in "**Common Entrance Test for Master of Computer Application (MCA) Course- (JECA-2012)**" Examination, September 2012.
- **Silver Performer** Award during Initial Learning Program Training, "**Tata Consultancy Services"**, Kolkata, India. August 2012.

Extracurricular Activities

- Completed a course in Painting with Distinction in both theory and practical and was awarded Diploma of Chitra Visharad Pratham Khand from Pracheen Kala Kendra Chandigarh board, India. September 2005.
- Selected as a member of the Anti-Ragging Committee, RCC Institute of Information Technology, Kolkata, India. May 2014– July 2015
- Selected as book bank secretary during B.Sc, Seth Anandram Jaipuria College, Kolkata, India. January,2010.
- Cultural Head for NAVEEN '2013 (fresher's welcome) during post-graduation, RCC Institute of Information

Conferences/Publications

- **Title: Autonomous Personalized Dynamic ECG Analysis Predicts 1-hour Incidence of Sudden Cardiac Arrest**
  Conference: American Heart Association (2024 Scientific Session)- November 16-18, 2024.
  Hazra D, Wang C, Estes S, Joshi P, Friday A, Vaughan L. B, Jones R. S, Dey S, DeMazumder D

- **Title: Automated personalized modulation of the sympathetic "fight-or-flight" reflex in vivo using implantable microdevices for enhancing neurocardiac function and reducing mortality risk.**
  Conference: American Heart Association (2024 Scientific Session)- November 16-18, 2024.
  Kundu D, Estes S, Joshi P, **Hazra D**, Mukherjee S, Friday A, Vaughan L. B, Jones R. S, Dey S, DeMazumder D

- **Title: Intelligent implantable microdevices for continuous monitoring and automated neurophotonic optogenetic modulation of autonomic function enhances cardiac function and reduces risk of cardiovascular death.**
  Conference: High-Risk, High-Reward Research Symposium, NIH on June 6-7, 2024
  Kundu D, **Hazra D**, Vaughan L. B, Evans P, Dey S, DeMazumder D

- **Title: 60 Predicting chorioamnionitis using AI-based methods: a retrospective cohort study**
  Journal: American Journal of Obstetrics & Gynecology
  Waldrop, A.R., James, T.K., Suharwardy, S., Studer, M., Chang, A., Bernal, C.E., Xie, F., Shome, S., **Hazra, D.**, Kim, Y. and Clarke, G., 2024. 60 Predicting chorioamnionitis using AI-based methods: a retrospective cohort study. American Journal of Obstetrics & Gynecology, 230(1), p.S46.

- **Title: Enhancing Classification of Cells Procured from Bone Marrow Aspirate Smears Using Generative Adversarial Networks and Sequential Convolutional Neural Network**
  Journal: **Computer Methods and Programs in Biomedicine** (First Author, SCIE, **IF: 7.027**)
  Hazra D, Byun YC, Kim WJ. Enhancing Classification of Cells Procured from Bone Marrow Aspirate Smears Using Generative Adversarial Networks and Sequential Convolutional Neural Network. Computer Methods and Programs in Biomedicine. 2022 July 10;107019.

- **Title: IncepX-Ensemble: Performance Enhancement Based on Data Augmentation and Hybrid Learning for Recycling Transparent PET Bottles**
  Journal: **IEEE Access** (Second Author, SCIE, **IF: 3.476**)
  Chatterjee S, **Hazra D,** Byun YC. IncepX-Ensemble:Performance Enhancement Based on Data Augmentation and Hybrid Learning for Recycling Transparent PET Bottles. IEEE Access. 2022 July 5;52280-93.

- **Title: Enhancement of Image Classification Using Transfer Learning and GAN-Based Synthetic Data Augmentation**
  Journal: **Mathematics** (Second Author, SCIE, **IF: 2.592**)
  Chatterjee S, **Hazra D,** Byun YC. Enhancement of Image Classification Using Transfer Learning and GAN-Based Synthetic Data Augmentation. Mathematics. 2022 May 4;1541.

- **Title: Generative Adversarial Networks for Creating Synthetic Nucleic Acid Sequence of Cat Genome**
  Journal: **International Journal of Molecular Sciences** (First Author, SCIE, **IF: 6.208**)
  Hazra D, Byun YC, Kim MR. Generative Adversarial Networks for Creating Synthetic Nucleic Acid Sequences of Cat Genome. International Journal of Molecular Sciences. 2022 March 28;3701.

- **Title: Synthesis of Microscopic Cell Images Obtained from Bone Marrow Aspirate Smears through Generative Adversarial Networks**
  Journal: **Biology** (First Author, SCIE, **IF: 5.168**)
  Hazra D, Byun YC, Kim WJ, Kang CU. Synthesis of Microscopic Cell Images Obtained from Bone Marrow Aspirate Smears through Generative Adversarial Networks. Biology. 2022 Feb 10;11(2):276.

- **Title: Generating Synthetic Data to Reduce Prediction Error of Energy Consumption**
  Journal: **Computers, Materials & Continua** (First Author, SCIE, **IF: 3.860**)
  Hazra D, Shafqat W, Byun YC. Generating Synthetic Data to Reduce Prediction Error of Energy Consumption. CMC-COMPUTERS MATERIALS & CONTINUA. 2022 Jan 1;70(2):3151-67.

- **Title: Generating Synthetic Fermentation Data of Shindari, a Traditional Jeju Beverage, Using Multiple Imputation Ensemble and Generative Adversarial Networks**
  Journal: **Applied Sciences** (First Author, SCIE, **IF: 2.838**)
  Hazra D, Byun YC. Generating Synthetic Fermentation Data of Shindari, a Traditional Jeju Beverage, Using Multiple Imputation Ensemble and Generative Adversarial Networks. Applied Sciences. 2021 Jan;11(6):2787.

- **Title: SynSigGAN : Generative Adversarial Networks for Synthetic Biomedical Signal Generation**
  Journal: **Biology** (First Author, SCIE, **IF: 5.168**)
  Hazra D, Byun YC. SynSigGAN: Generative adversarial networks for synthetic biomedical signal generation. Biology. 2020 Dec;9(12):441.

- **Title: Toward Improving the Prediction Accuracy of Product Recommendation System using Extreme Gradient Boosting and Encoding Approaches**
  Journal: **Symmetry** (Second Author, SCIE, **IF: 2.940**)
  Shahbazi Z, **Hazra D**, Park S, Byun YC. Toward improving the prediction accuracy of product recommendation system using extreme gradient boosting and encoding approaches. Symmetry. 2020 Sep;12(9):1566.

- **Title: Upsampling Real-Time, Low-Resolution CCTV Videos Using Generative Adversarial Networks**
  Journal: **Electronics** (First Author, SCIE, **IF: 2.690**)
  Hazra D, Byun YC. Upsampling real-time, low-resolution CCTV videos using generative adversarial networks. Electronics. 2020 Aug;9(8):1312.

- **Title: OEBR-GAN : Object Extraction and Background Recovery Generative Adversarial Networks**
  Journal: **IEEE Access** (First Author, SCIE, **IF: 3.467**)
  Hazra D, Byun YC. OEBR-GAN: object extraction and background recovery generative adversarial networks. IEEE Access. 2020 Jul 22;8:135730-41.

- **Title: Brain Tumor Detection using Skull Stripping and U-Net Architecture**
  Journal: **International Journal of Machine Learning and Computing** (First Author, Scopus)
  Hazra D, Byun Y. Brain Tumor Detection Using Skull Stripping and U-Net Architecture. International Journal of Machine Learning and Computing. 2020 Feb;10(2):400-5.

- **Title: Roof Edge Detection for Solar Panel Installation**
  Journal: **Smart Technologies in Data Science and Communication** (First Author, Springer)
  Hazra D, Byun YC. Roof Edge Detection for Solar Panel Installation. InSmart Technologies in Data Science and Communication 2020 (pp. 99- 104). Springer, Singapore.

- **Title: Old Document Restoration using Super Resolution GAN and Semantic Image Inpainting**
  Journal: **Proceedings of the International Workshop on Artificial Intelligence and Education** (Second Author, Conference)
  Kim YJ, **Hazra D**, Byun Y, Ahn KJ. Old document restoration using super resolution GAN and semantic image inpainting. InProceedings of the International Workshop on Artificial Intelligence and Education 2019 Nov 25 (pp. 34-38).

- **Title: Extraction of Parasagittal Meningioma Tumor using Skull Stripping Method and Multilevel Thresholding**
  Journal: **IEEE Transportation Electrification Conference and Expo, Asia-Pacific** (First Author, IEEE)
  Hazra D, Byun YC. Extraction of Parasagittal Meningioma Tumor using Skull Stripping Method and Multilevel Thresholding. In2019 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC Asia-Pacific) 2019 May 8 (pp. 1-4). IEEE.

- **Title: Detection of Colloid Cyst in Brain through Image Processing Techniques**
  Journal: **International Journal of Multimedia and Ubiquitous Engineering** (First Author, Scopus)
  Hazra D, Bhattacharyya D, Kim HJ. Detection of colloid cyst in brain through image processing techniques. International Journal of Multimedia and Ubiquitous Engineering. 2016 Sep;11(9):343-54.

Declaration

The information provided above is true to the best of my knowledge.