Shantanu Ghosh

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OBJECTIVE *To secure a PhD position in the area of Machine Learning/Deep Learning with a focus of Causal Inference and Computer Vision*

RESEARCH INTERESTS *Deep Learning, Machine Learning, Causal Inference, Computer Vision*

EDUCATION

University of Florida, Gainesville, FL, USA
Master of Science, Computer and Information Sciences
Advisor: Dr. Mattia Prosperi
Area of study: Deep Learning, Machine Learning, Causal Inference
Aug, 2019 - May, 2021 **GPA: 3.88/4**

West Bengal University of Technology, West Bengal, India
Bachelor of Technology from Institute of Engineering and Management
Computer Science and Engineering
Aug, 2008 - June, 2012 **GPA: 8.38/10**

PUBLICATION

• *Deep Propensity Network using a Sparse Autoencoder for Estimation of Treatment Effects* - **Shantanu Ghosh**, Jiang Bian, Yi Guo, Mattia Prosperi. Journal of the American Medical Informatics Association (JAMIA) **(Under review)**

• *Causal AI with Real World Data: Do Statins Protect From Alzheimer's Disease Onset?* - Mattia Prosperi, **Shantanu Ghosh**, Zhaoyi Chen, Marco Salemi, Tianchen Lyu, Jiang Bian. American Medical Informatics Association (AMIA), 2020 **(Under review)**

• *Propensity Score Synthetic Augmentation Matching using Generative Adversarial Networks (PSSAM-GAN)* - **Shantanu Ghosh**, Jiang Bian, Mattia Prosperi. Thirty-Fifth AAAI Conference on Artificial Intelligence **(Under review)**

RESEARCH EXPERIENCE

Data Intelligence Systems Lab (DISL), Gainesville, FL, USA
Graduate Student Assistant ***March 2020 - Present***
Advisor: Dr. Mattia Prosperi, Dr. Jiang Bian, Dr. Yi Guo

• Developed Deep Propensity Network - Sparse Autoencoder(DPN-SA) - a deep stacked sparse auto encoder based neural network model to calculate propensity score to estimate average causal effect (ATE) of a treatment in the area of Causal Inference. [**Code**]

• Developed Propensity Score Synthetic Augmentation Matching using Generative Adversarial Networks (PSSAM-GAN) - a deep learning training algorithm to generate synthetic treated samples to remove imbalance within a observational dataset for Propensity score matching (PSM). [**Code**]

Multimedia Communications and Networking Laboratory (MCN), Gainesville, FL, USA
Independent Researcher ***Feb 2020 - May 2020***
Advisor: Dr. Dapeng (Oliver) Wu
Developed a Deep Convolutional Multitask Neural Network to classify different textures within a image under the supervision of Dr Prof Dapeng Oliver Wu of the Department of Electrical & Computer Engineering in the University of Florida. [**Code**]

PROFESSIONAL EXPERIENCE

Lexmark International India Pvt Ltd, Kolkata, West Bengal, India
Software Engineering Professional II ***Oct 2016 - July 2019***
Worked as a Senior UI developer for the product Publishing Platform for Retail(PPR)

and developed InStore Publisher component(ISP) of PPR using Angular, Bootstrap, HTML5, CSS and performed unit testing using Jasmine/Karma Framework with active participation in 2 major releases.

Cognizant Technology Solutions India Pvt Ltd, Kolkata, West Bengal, India
Associate, Projects ***March 2013 - September 2016***
As an Application developer of the project Wells Fargo Domain Services and Customer Centre Optimization, developed 9 WCF web services in the Contract First Approach to provide secure communication between different In-house applications and the reporting platform of Wells Fargo using Service Oriented Architecture (SOA) using C# .Net 4.5, Oracle Client 11g.

PROJECTS

Classification of Handwritten Characters **Oct 2019 - Dec 2019**
Fundamentals of Machine Learning, University of Florida, FL, USA

Developed a deep CNN to classify Handwritten Characters, by training it with the Handwritten Character Dataset under the guidance of Prof Alina Zare, inspired by the famous architecture **"Lenet"** (`http://yann.lecun.com/exdb/publis/pdf/lecun-01a.pdf`) by utilizing the Adam Optimizer, Batch Normalization and dropout and achieved a classification accuracy of **97.3%** on a customised data set prepared by Prof Zare [**Code**]

- **Technology/Tools:** Python, Pytorch, Sckit-learn

Implementation of P2P network **Nov 2019 - Dec 2019**
Computer Networks, University of Florida, FL, USA

Created a peer-to-peer(P2P) network for file downloading. Developed components – peer and file owner. The file owner has a file, and breaks the file into chunks of 100KB. Each peer connects to the file owner to download some chunks with the help of two threads, one acting as a server that uploads the local chunks to another peer (referred to as upload neighbor), and the other acting as a client that downloads chunks from a third peer (referred to as download neighbor). Tested the code with max **5** peers and max file size of **13.3 MB**. [**Code**]

- **Technology/Tools:** Socket Programming, Java

Hashtag Counter **March 2020 - April 2020**
Advanced Data Structures, University of Florida, FL, USA

Implemented a system to find the most popular hashtags that appear on social media using Max Fibonacci Heap data structure and a max priority structure to find out the most popular hashtags. Tested the code with **1M** hashtags. [**Code**]

- **Technology/Tools:** Java

TECHNICAL SKILLS

Languages : Python, C++, C, Java, C#, Javascript/Typescript
Database : MySQL, Oracle 9i/10g, MS SQL Server, DB2
Web Development : Angular, Node.js, WCF
Machine Learning : TensorFlow, PyTorch, Scikit-learn

CERTIFICATION .

- **Mathematics for Machine Learning: Linear Algebra** by Imperial College of London on *Coursera **[Verify]***
- **Mathematics for Machine Learning: Multivariate Calculus** by Imperial College of London on *Coursera **[Verify]***
- **Neural Networks and Deep Learning** by Prof Dr Andrew Ng on *Coursera **[Verify]***
- **Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization** by Prof Dr Andrew Ng on *Coursera **[Verify]***
- **Convolutional Neural Networks** by Prof Dr Andrew Ng on *Coursera **[Verify]***

GRADUATE COURSES • Fundamentals of Machine Learning • Distributed Operating Systems • Computer Networks • Mathematics for Intelligent Systems • Advanced Data Structures • Machine Learning • Deep Learning Computer Graphics • Fundamentals of Probability

ACHIEVEMENTS.

• Recipient of **National Scholarship** Award from **Central Government Human Resource Development Department of Higher Education, India** for excellent result in Higher Secondary Examination in the state of West Bengal, India.
• Topped with **1%** of all candidates appeared in **West Bengal Joint Entrance Examination** in 2008.
• Received **Achievement Award** during the admission of graduate studies in the University of Florida in Fall 2019.

REFERENCES Available upon request.