Md Enayat Ullah

Dual Degree Student, Department of Mathematics and Statistics, IIT Kanpur

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Education

Current	Dual Degree (B.S. – M.S.), Indian Institute of Technology, Kanpur	**10/10***
	Major: Mathematics & Scientific Computing, Dept. of Maths - Stats	**8.1/10**†
	Minor: Computer Science (Artificial Intelligence), English Literature	($*$-*PG*,$\dagger$-*UG*)
July '11	12th (AISSCE), CBSE Board India, MMSS Vidya Mandir, Madhupur	**90.60**
July '11	10th (ICSEE), ICSE Board India, Carmel Convent School, Madhupur	**95.20**

Scholastic Achievements

- Selected for Summer Research Expeditions (SRE) programme, offered by *Johns Hopkins University*, Baltimore, USA
- Awarded an **A*** grade for exceptional performance in two courses, including the Natural Language Processing Course
- Recipient of INSPIRE Scholarship awarded by Department of Science and Technology, MHRD, Government of India
- First Runners-up in Internet of Things competition for building a Smart Mirror, at the *4th Inter-IIT Technical Meet*
- Among the Top 10 Best coded applications in India for Hitch-a-Ride, a Windows phone app in *Microsoft Code.fun.do*

Internships

Non-Convex Optimization: Matrix Sensing and Factored Model *Summer'16*

Prof. Raman Arora, Johns Hopkins University, USA

- Studied Non-Convex Optimization problems & how their benign geometry allow algorithms to efficiently escape saddle points
- Investigated the geometry of Matrix Sensing & how the saddle points encountered can be alleviated owing to local properties
- Contributed to an open-source non-convex optimization library by implementing Robust Regression, rPCA, Matrix Completion

N-body Simulation using Sampling in Deterministic Annealing *Summer'15*

Prof. Geoffrey Fox, Indiana University, USA

- Contributed to an open-source library on clustering & visualization of genomic sequences which uses Deterministic Annealing
- Studied algorithms for solving N-body problems like Hierarchical Treecodes, Fast Multi-Pole methods, Barnes-Hut simulation
- Approximated N-body measure by implementing Treecodes & heuristically sampling from a distribution on partition scheme

Selected Projects

Neural Machine Translation with Attention using Bilingual Embeddings *Spring'16*

Prof. Vinay Namboodiri, Indian Institute of Technology, Kanpur

- Constructed bilingual embeddings by learning word representations from comparable corpora using merge & shuffle heuristics
- Trained a sequence to sequence learning network based on encoder-decoder LSTMs on Europarl Machine Translation dataset
- Tested it plugging Bilingual Embeddings which results in slight improvement in the translational performance metric (*BLeU*)

An Attempt to Escape the Deep Saddle Points *Spring'16*

Prof. Purushottam Kar, Indian Institute of Technology, Kanpur

- Extended the work on generating guarantees for SGD to escape saddle points in the classical two-layer neural network setting
- Implemented a two-layer neural network whose weights are obtained from tensor decomposition of the strict saddle objective

Encoding Prior Knowledge using Label Relation Graphs *Spring'16*

Prof. Piyush Rai, Indian Institute of Technology, Kanpur

- Formalized the relationships between response categories using Hierarchical & Exclusion edges extracted from Wordnet lexica
- Trained a visual object recognition system using pre-trained VGG features by exact inference using Junction Tree Algorithm

Domain Invariant Transfer Kernel Learning *Fall'15*

Prof. Harish Karnick, Indian Institute of Technology, Kanpur

- Designed Spectral kernels by extrapolating target eigensystem on source samples to reduce the Nystrom Approximation error
- Plugged the Domain invariant Kernel matrix to an SVM which outperformed the traditional SVM on benchmarked datasets

Causal Relationships Between Econometric Parameters *Fall'14*

Prof. Amit Mitra, Indian Institute of Technology, Kanpur

- Used Time-Series econometric modelling on the data of policy macroeconomic variables using Correlation and Causality tests
- Established that FDI inflows & Exports have a direct causal linkage with the GDP of India but possess no reciprocal causality

Skill Set

Programming	C, C++, Python, R, Shell, Octave, PHP, HTML, CSS
Other Tools	Git, MATLAB, LaTeX, Android SDK, Adobe Photoshop
Relevant-Coursework	Probabilistic Machine Learning, Optimization Techniques, Learning with Kernels, Stochastic Process, Online Learning, Data Structures & Algorithms, Time Series Analysis, Real & Complex Analysis, NLP