

Prateek Chanda

Research Software Engineer (SCAI Center Fellow), Microsoft Research Lab, India
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EXPERIENCE

Microsoft Research Research Software Engineer, SCAI Center Fellow MindNotes - Application for mental health diagnosis <ul style="list-style-type: none">Collaborating with NIMAHNs and ICARUS UI Design team to build an end-to-end internet based mental health application.Implemented an initial architecture for the app using Azure Bot Framework and Azure Cognitive Services - LUIS to understand patient query and showcase relevant mental health resources within the app.Developed and shipped entire back end on Azure SQL Server using App Service for storing user responses and client/therapist details and other logistics.Integrated Microsoft Graph API with existing App Service for building a message communication framework between patients & therapists with support for audio and note sharing.Build NLP models Azure Cognitive services to build word embeddings from free text responses for detecting suicidal responses or sentiments for improving recommendations.Content Recommendation via causal inference learning and traditional matrix factorization methods.Design effective interventions including content/section recommendation service through causal inference analysis. Let's Talk: Microsoft Teams App for Mental Health <ul style="list-style-type: none">Worked in a team of 15 people and led the development group in building an end-to-end Microsoft teams application for recommending appropriate mental health resources within the workplace.Built the entire system using Azure Bot Framework to represent a chat framework where users can express their current emotional status and get recommended to appropriate HR resources within Microsoft to cater to their current emotional status.	Technology for Emerging Markets Supervisor : Dr. Amit Sharma	Bangalore , India Nov 2019 - Present
Indian Statistical Institute Research Assistant (Remote)	Indian Statistical Institute Advisor : Malay Bhattacharyya	Baranagar , India May 2021 - Present
<ul style="list-style-type: none">Performed EHR analysis based on Sage Bio Networks Competition to detect which patients are most Covid vulnerable.Employed models like Graph Neural Networks, InterpretML, and other ensemble classification algorithms. Report Models ExploredProposed a distributed anomaly detection frame work in large data streams in an online manner. Currently under review at VLDB		
Complex Network Research Group Research Consultant (MHRD sponsored)	IIT Kharagpur <i>AI for Systems</i> Advisor : Bivas Mitra , Niloy Ganguly	Kharagpur , India May 2019 - Nov 2019
<ul style="list-style-type: none">Performed a theoretical study on state of the art anomaly detection algorithms in enterprise systems and did a comparative study based on models using GANs and simple classification approachesProposed a data-driven framework for real time anomaly detection/troubleshooting of large-scale storage system failures leveraging several data mining techniques on system logs like regression, clustering, Apriori, graph analytics See project for details		
Research Intern (Microsoft Research Sponsored)	Multi-User Activity Recognition Advisor : Bivas Mitra	May 2017 - Jun 2017
<ul style="list-style-type: none">Performed a theoretical study on traditional group activity recognition models.Based on temporal sensor data distribution, estimate missing data through Expected maximization algorithmEstimated Group formation over temporal sensor data like SSID-WiFi valuesStudied the correlation effect and causality for different user features like GPA,locationData w.r.t group activity and formationContributed to the theoretical analysis of the model (initial working of GroupSense) that got acknowledged in Paper. Project Docs Code		
Machine Intelligence Unit Research Intern May '18	Indian Statistical Institute India Advisor : Dr. Ashish Ghosh	Baranagar , India Project Report Code
<ul style="list-style-type: none">Performed theoretical study on different Metric Learning algorithms to learn similarity metric from data distribution.Did an empirical analysis as well as evaluation of metric learning methodologies w.r.t different datasets like Iris, Wine Dataset, thus showcasing performance & limitations across various data distribution.		
SunPy Google Summer of Code	NASA Open Source Software Solar Data Analysis in Python Technologies : Python , Git	Remote, US Dec 2016 - Apr 2018
<ul style="list-style-type: none">Collaborated with a team of 60 researchers to develop modules for efficient solar data retrieval, data processing and storage functionality for data analysis.Implemented a solar data retrieval system to collect solar data from solar observatories based on date in an SQL data base to analyze different helio-features from the data over a period of 10 years. Used by the SunPy project.Implemented proposed solar image processing algorithm from research paper achieving 18% improved memory utilization and better feature extraction with less noise. Got acknowledged along with researchers at NASA Goddard Space Flight Center in nine Software Releases.		

PUBLICATIONS

- **MINDNOTES: A Mobile Platform to enable users to break stigma around mental health and connect with therapists:** CSCW Demo 2021 [ACM DL](#)
Prateek Chanda, Amogh Wagh, Jemimah A Johnson, Swaraj Renghe, Vageesh Chandramouli, George Mathews, Sapna Behar, Poornima Bhola, Girish Rao, Paulomi Sudhir, TK Srikanth, Amit Sharma, Seema Mehrotra
- **Does the Relationship Between Modules Facilitate in Predicting System Anomaly?:** Under Review PAKDD 2022 [Paper Link](#)
Harsh Borse, Prateek Chanda, Paromita Dutta Soumik Sinha, Mainack Mondal, Bivas Mitra
- **Human Computation and Crowdsourcing for Earth:** Accepted AAAI HCOMP 2021 [DOI](#)
Yasaman Rohanifar, Syed Ishtiaque Ahmed, Sharifa Sultana, Prateek Chanda, Malay Bhattacharyya
- **Reaching out : Towards a sustainable allocation strategy between users and therapists:** Accepted NeurIPS Machine Learning in Public Health [Acceptance Link](#)
Prateek Chanda
- **Distributed Anomaly Detection in Edge Streams using Frequency based Sketch Datastructures:** Under review VLDB 2022 [pre-print](#)
Prateek Chanda, Malay Bhattacharyya
- **A Sketch Based Game Theoretic Approach to Detect Anomalous Dense Sub-Communities in Large Data Streams:** Under review AISTATS 2022 [pre-print arXiv:2111.15525](#)
Prateek Chanda, Aadirupa Saha
- **Robust Deep Reinforcement Learning Control against Minimalistic Adversarial Attack in Atari Games :** Accepted AAAI-22 Workshop on Robust Artificial Intelligence System Assurance (RAISA) [Acceptance Link](#)
Prateek Chanda
- **A Novel Graph Based Clustering Approach to Document Topic Modeling:** Accepted 9th ICCNT 2018, IISc [IEEE Xplore](#)
Prateek Chanda, Asit Kr Das
- **SunPy A Python package for Solar Physics:** Journal Paper *Journal of Open Source Software* 2020 [DOI](#)
Stuart Mumford, Prateek Chanda, The SunPy Community
- **SunPy v1. 0, the community-developed, free and open-source solar data analysis environment for Python. :** Journal Paper *American Geophysical Unit / NASA ADS* 2019 [DOI](#)
Stuart Mumford, Prateek Chanda, The SunPy Community
- **The sunpy project: Open source development and status of the version 1.0 core package:** *The Astrophysical Journal* 2020, IOP [DOI](#)
Stuart Mumford, Prateek Chanda, The SunPy Community

PROJECTS

MORE PROJECTS ON GITHUB : [PRATEEKIEST/REPOSITORIES](#)

Graph Based Clustering Document Topic Modelling

- Designed a novel clustering algorithm based on importance factor calculation of nodes in complex networks with improved accuracy compared to traditional graph based methods. - 9th ICCNT 2018, IISc, IEEE

Real Time Anomaly Detection in Enterprise environment - NetApp Collaboration **Advisor: Bivas Mitra, Niloy Ganguly**

Proposed a novel anomaly detection along with failure prediction in an enterprise setting with modules/microservices interacting with each other. Studied how module/microservice interaction changes w.r.t time within the normal period and the anomaly period. For online phase, based on logging intervals proposed a thresholding mechanism to indicate if the corresponding next logging interval is anomalous based on previous behaviour. Presented our method to researchers at NetApp for different enterprise datasets like Hadoop, IBM Bluegene.

EHR Analysis in Sage BioNetworks Advisor : Malay Bhattacharyya, ISI

- Worked on EHR analysis of COVID-19 patients for the Sage Bio-Networks competition.

-Proposed a novel interpretable model that takes feature dependencies into consideration for better accuracy prediction

-Worked on an ensemble of models include RandomForest, GNN(Graph Neural Networks) to check what relevant features are important

Recommendations for Mental Health Therapeutic activities in MindNotes - Microsoft Research India Advisor : Dr. Amit Sharma

- Developed user feature embeddings based on user responses logging and telemetry logging for building recommendation models for recommending different therapeutic activities and sections of the app as interventions to the user.

- Started with initial collaborative and content based filtering for recommendations, and further developed a causal recommendation model where each micro-intervention was indicated as treatment to the user.

ACHIEVEMENTS

- **AISTATS 2022 Mentorship Program:** Selected for AISTATS Mentorship Program to work with [Aadirupa Saha](#) at Microsoft Research NYC
- **AI for Science NeurIPS Workshop Mentorship Program:** Selected for AI for Science NeurIPS Mentorship Program to work with [Malay Bhattacharyya](#) at Indian Statistical Institute
- **Microsoft Garage Hackathon 2020:** Recipient of Hackathon 2020 NGO award from Microsoft Garage India under AI for Social Good.
- **Microsoft Research India Sponsorship:** Recipient of MSR India Sponsorship Funding for internship work at IIT Kharagpur
- **GAABESU research award IEST:** Received GAABESU(IEST) research award for research contributions for academic year 2018
- **JBNSTS Scholar:** Selected for Jagadis Bose National Science Talent Search Scholarship
- **RMO:** Qualified for Regional Mathematics Olympiad
- **AIEEE Merit:** Within top 0.26% of applicants in All India Engineering Entrance Exam approx. 1.3 million people
- Qualified for **Facebook HackerCup 2019 & Google Kickstart 2019**

SKILLS

- **Languages:** Python, C++, SQL, Java, C#, TypeScript
- **Technologies:** Azure, Azure ML Studio, GitHub, GitLab, Jekyll, GCP
- **Libraries:** TensorFlow, PyTorch, Scikit-Learn, Pandas, Jupyter, Microsoft Graph SDK

EDUCATION

Indian Institute of Engineering Science and Technology, Shibpur

Howrah, India

Bachelor of Technology in Computer Science & Engineering; *First Class Honors* GPA: 8.86/10.0 WES: 10/10

2015 - 2019

Thesis: *Avoiding Past Choice Regrets: A Game Theoretic Community Detection using Temporal Information*

Advisor: [Malay Kule](#) & [Dr.Susanta Chakraborty](#)

[Thesis Report](#)

Relevant Coursework: Data Structures & Algorithms, Operating Systems, Database Management, Cloud Computing & Big Data, Machine Learning & AI, Probability & Statistics, Discrete Structures, Computer Graphics, Computer Networks, Computer Architecture

POSITIONS OF RESPONSIBILITY

- **Program Committee for ODD SIGKDD workshop 2021** - [Workshop Link](#)
- **Reviewer** for IEEE Transactions on Mobile Computing , COMSNETS, AISTATS, Journal of Open Source Software
- **Google Code In, GSoC Mentor** : Mentored over 80 students under Google Code In 2018, Hacktoberfest 2018, 2017
- Leading the open source club at Campus as a GitHub Campus Expert - organising hackathons and open source mentorship programs in campus and engaged students from different departments in open source