Piyush Tiwary

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Education

2017-2021 (Expected)	**Indian Institute of Technology Patna**, *Bachelor of Technology in Electrical Engineering*, CGPA: *8.33/10.0* (After 7 Semesters).
Relevant Topics	Machine Learning, Linear Algebra, Partial Differential Equations, Probability Theory and Random Process, Communication Systems, AI-based Signal Processing.
MOOCs	Algorithmic Toolbox, Algorithms on Strings, Discrete Mathematics, SQL for Data Science, Convolutional Neural Networks, Sequence Models

Publications

Journals

IEEE IoT Journal	Ankur Pandey, **Piyush Tiwary**, Sudhir Kumar and Sajal K Das, "Adaptive Mini-Batch Gradient Ascent based Localization for Indoor IoT Networks under Rayleigh Fading Conditions". IEEE Internet of Things Journal, DOI: 10.1109/JIOT.2020.3047982, 2021. "click here to view"

Conferences

COMSNETS 2021	**Piyush Tiwary**, Ankur Pandey, Sudhir Kumar. "Differential d-Vectors for RSS based Localization in Dynamic IoT Networks". 13th International Conference on COMmunication Systems & NETworkS (COMSNETS'2021). [**Best Poster Presentation Award**] (Accepted) "click here to view"
ICCCN 2020	Ankur Pandey, **Piyush Tiwary**, Sudhir Kumar and Sajal K Das, "Residual Neural Networks for Heterogeneous Smart Device Localization in IoT Networks," 29th International Conference on Computer Communications and Networks (ICCCN'2020), Honolulu, HI, USA, . "click here to view"
ICDCN 2019	Ankur Pandey, **Piyush Tiwary**, Sudhir Kumar, and Sajal K Das. "A hybrid classifier approach to multivariate sensor data for climate smart agriculture cyber-physical systems". 20th International Conference on Distributed Computing and Networking (ICDCN ACM'2019). "click here to view"

Under Review

IEEE Letter	**Piyush Tiwary**, Ankur Pandey, Sudhir Kumar, Moustafa Youssef "Novel Differential r-Vectors for Localization in Heterogeneous IoT Networks"
Journal	Tirthankar Ghosal, **Piyush Tiwary**, Robert Patton, Christopher Stahl, "What did your work invoke? On finding research propagation and lineage in a scholarly network"
Journal	Ankur Pandey, **Piyush Tiwary**, Sudhir Kumar and Sajal K Das, "FadeLoc: Smart Device Localization for Generalized $\kappa - \mu$ Faded IoT Environment"

Research Experience

Aug. 2020 - Present	**B.Tech Thesis - Mitigating Device Heterogeneity for Indoor Localization**, *IIT Patna*, Guide: ● Dr. Sudhir Kumar, IIT Patna.
	○ The B.Tech Thesis aims to address the Device Heterogeneity issue in the RSS based localization methods.
	○ Novel deep neural nets architectures are proposed to extract *domain invariant* features for localization.
Aug. 2020 - Oct. 2020	**Establishing Research Lineage via Citation Significance**, *IIT Patna*, Guide: ● AI-NLP-ML Lab, IIT Patna ● ORNL CDA Group.
	○ Worked on a research project to identify Significant Citations in a Research Paper.
	○ The aim is to establish a Research Lineage & Identify how knowledge is transferred through research papers by creating a Citation graph through a feature engineering approach.

Dec. 2019 - Dec. 2020	**Localization under Generic Fading Models**,	*IIT Patna*,

Guide: ● Dr. Sudhir Kumar, IIT Patna   ● Prof. Sajal Das, Missouri University.
  ○ Worked on localization using generic fading models using an MLE based approach.
  ○ Rayleigh Fading: Proposed **MLE for Rayleigh fading model** with simultaneous parameter estimates and an **Adaptive Mini-Batch** gradient ascent method to quickly maximize the log-likelihood to find the location estimate.
  ○ $\kappa - \mu$ Fading: Proposed an **approximate MLE for $\kappa - \mu$ fading model** and an **Adaptive Order** based likelihood maximization using a look-up table to localize a smart device.

May. 2019 - July. 2019	**Research Intern**,	*IIIT Bangalore*,

Guide: ● Dr. Manish Gupta, Chair Professor IIIT Bangalore.
  ○ Worked as a part of R&D Team of VideoKen (a IIITB based startup). Studied and made a *Pytorch* implementation of Google's **UIS-RNN** and developed a model to **diarize 2 speakers** with maximum latency of 30 seconds for "Interview" type of audios.

Industrial Experience

May 2020 - July 2020	**Software Development Intern**,	*Remote (due to COVID-19)*,

CapitalVia Global Research Limited - Investment Advisor.
  ○ Worked with Research team of CapitalVia, to implement deploy-able framework for various trading strategies aimed to provide optimum parameter for a certain strategy based on back-testing results.
  ○ Made a UI in Python using **Flask** & **BeutifulSoup** to extract live data from NSE website.

June. 2019 - July. 2019	**Crio Summer Of Doing - 2019**,	*Remote*,

Crio.Do.
  ○ Developed Back-end of Q-Eats (a food Ordering App) using Spring framework in Java.
  ○ Learnt and implemented many Industry related tools/technologies like - REST APIs, MongoDB, Caching and Docker, and used it to create an Order Page for Q-Eats in the Capstone Challenge.

Projects

July 2020	**Shakespeare at Your Service**,	*Sequence Model to Generate Poem*.

  ○ Developed a 3-layered Character generation sequence model based on the user's initial phrases as input and trained the model on Shakespeare's Sonnets for the output poem to have a Shakespearean flavour.

May 2020	**Gender Predictor**,	*Sequence Model to Predict Gender*.

  ○ Developed a Many to One single-layered RNN in Pytorch to predict the human gender with name as input.

May 2019 - June 2019	**Notes Seperator**,	*Developer Student's Club*.

  ○ Developed a CNN model for IITP students to automatically detect the given image for notes.

Jan 2018	**Celvika**,	*ChatBot*.

  ○ Used **LSTMs** to make a real-time primitive chatbot capable of conversing through GUI.

Technical Skills

Languages	C, C++, Python, Julia
Others	SQL, MATLAB, Flask, LATEX

Achievements

COMSNET'21	Received **"The Best Poster Presentation Award"** at COMSNETS-2021.
Google AI	Selected and attended **AI Summer School** hosted by Google Research India.
Codechef	Secured a Global Rank of **60** in Codechef July Long Challenge'19.
Comp Coding	Specialist on Codeforces, 4-star on Codechef and Ranked in top 5000 on UVa Online Judge.
JEE Adv.	Secured **All India Rank 4880** in JEE Advanced 2017 among **150,000** candidates.

Positions Of Responsibility

April 2020-Present	**Advisor**,	*NJACK IIT Patna*.

  ○ Advisor of Machine Learning Department at NJACK, Computer Science Club of IIT Patna.
  ○ Conducted classes for students to make them familiar with basic concepts of Machine Learning.

Aug 2018 - Present	**Badminton Coordinator**,	*Student Gymkhana IIT Patna*.

  ○ Lead the Badminton team of IIT Patna in various Sports tournament. Represented IIT Patna in 51st (at IITM), 52nd (at IITG) & 53rd (at IITBBS) **Inter IIT Sports Meet** along with 4 other teammates