

Piyush Tiwary

Education

2017-2021 **Indian Institute of Technology Patna**, *Bachelor of Technology in Electrical Engineering*,
(Expected) 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**] "[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 - **Localization under Generic Fading Models**, *IIT Patna*
 Dec. 2020 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 - **Research Intern**, *IIIT Bangalore*
 July. 2019 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 - **Software Development Intern**, *Remote (due to COVID-19)*
 July 2020 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 & BeautifulSoup** to extract live data from NSE website.
- June. 2019 - **Crio Summer Of Doing - 2019**, *Remote*
 July. 2019 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 - **Notes Seperator**, *Developer Student's Club*.
 June 2019 • 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 **Advisor**, *NJACK IIT Patna*
 2020-Present • 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 - **Badminton Coordinator**, *Student Gymkhana IIT Patna*
 Present • 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