Piyush Tiwary

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Education

2017-2021 (Expected)	**Indian Institute of Technology Patna**, *Bachelor of Technology in Electrical Engineering*, CGPA: *8.36/10.0* (After 7 Semesters).
Relevant Topics	Machine Learning, Linear Algebra, Partial Differential Equations, Probability Theory and Random Process, Control Theory, Communication Systems, AI-based Signal Processing.
MOOCs	Algorithmic Toolbox, Algorithms on Strings, Discrete Mathematics, SQL for Data Science, Convolutional Neural Networks, Sequence Models

Technical Skills

Languages	C, C++, Python, Julia, Haskell
Libraries	Tensorflow, Keras, Pytorch
Others	SQL, MATLAB, Flask, LaTeX

Publications

Published

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). "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"

Submitted

ECIR 2021	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, "CropLoc: Localization under $\kappa - \mu$ Fading for Smart Precision Agriculture"
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"

Research Experience

Aug. 2020 - Present	**Differential r-Vector for RSS based Localization in IoT Networks**, *IIT Patna*, Guide: ● Dr. Sudhir Kumar, IIT Patna.
	○ Working on a Project to generalize RSS based localization methods across different target device.
	○ The aim is to extract *domain - invariant* features for RSS based localization to make it agnostic to different target devices.
Aug. 2020 - Oct. 2020	**Establishing Research Lineage via Citation Significance**, *IIT Patna*, Guide: ● AI-NLP-ML Lab, IIT Patna.
	○ 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.

April. 2020 - July 2020	**Localization in Generic $\kappa - \mu$ Faded Environment**, Guide: • Dr. Sudhir Kumar, IIT Patna • Prof. Sajal Das, Missouri University.	*IIT Patna*,

Localization in Generic $\kappa - \mu$ Faded Environment, *IIT Patna*,

Guide: • Dr. Sudhir Kumar, IIT Patna • Prof. Sajal Das, Missouri University.
- Proposed a generic localization framework using $\kappa - \mu$ fading model.
- The major contribution of the work are **approximate MLE for $\kappa - \mu$ fading** and an **Adaptive Order** based likelihood maximization using a look-up table.
- Manuscript is submitted to a Journal for publication.

April. 2020 - July 2020

Localization in Rayleigh Faded Environment, *IIT Patna*,

Guide: • Dr. Sudhir Kumar, IIT Patna • Prof. Sajal Das, Missouri University.
- Proposed a MLE based approach to localize a device in Rayleigh faded environment.
- The major contribution of the work are **MLE for Rayleigh fading** with simultaneous parameter estimates and an **Adaptive Mini-Batch** gradient ascent method to quickly maximize the log-likelihood using current convergence state.
- Manuscript is submitted to a Journal for publication.

Dec. 2019 - March 2020

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) and explored different methods of Speaker Diarization. Studied and made a *Pytorch* implementation of Google's **UIS-RNN**.
- Made a primitive model able to **diarize 2 speakers** with maximum delay of 30 seconds for "Interview" type of audios.

May. 2019 - July. 2019

Industrial Experience

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.
- Made a UI in Python using **Flask** & **BeutifulSoup** to extract live data from NSE website.
- Developed a Flask framework to provide optimum parameter for a certain strategy based on back-testing results on previous data.

May 2020 - July 2020

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.
- Made an Order Page for Q-Eats in the Capstone Challenge enabling user to see his/her orders and provided various functionalities.

June. 2019 - July. 2019

Projects

Shakespeare In Your Service, *Sequence Model to Generate Poem*.
- Made a 3-layered Character generation sequence model in Pytorch to generate poem based on initial phrase given by the user as input.
- The model is trained on Shakespeare's famous poem - Sonnet, so that the generated poem has Shakespearean taste to it.

July 2020

Gender Predictor, *Sequence Model to Predict Gender*.
- Made a Many to One Sequence Model in Pytorch to predict the gender of the person, by taking the name of the person as input.
- The model is a single layer RNN, which is trained on Indian, Arabic & American names.

May 2020

Notes Seperator, *Developer Student's Club*.
- Developing an app for students of IIT Patna which can automatically detect whether a given image is of someone's notes or not and will suggest you to delete them.
- Implemented different CNN architectures such as LeNet, AlexNet, VGGNet, GoogleNet and ResNet for classification.

May 2019 - June 2019

Crime Predictor, *Data Science Course Project CS244*.
- Project to Forecast crimes in the city of California using OSN dataset.
- Using various ML algorithms (Decision Tree, Random Forest, SVM, Naive Bayes, etc) to see which one best fits the data most accurately.

Jan 2019 - April 2019

Jan 2018	**Celvika**, *ChatBot.*
	○ Used the concept of **LSTMs** and **RNNs** to make a Real time primitive chatbot capable of doing conversation through GUI (like command line or shell).
	○ The bot is modeled using Tensorflow's seq2seq module with attention. The architecture uses 3 layers which can be configured to be either LSTM or GRU based.

Achievements

Google AI	Selected and attended in **AI Summer School** hosted by Google Research India..
Codechef	Secured a Global Rank of **60** in Codechef July Long Challenge'19.
Comp Coding	Specialist(Blue) on Codeforces and 4-star(Purple) on Codechef.
UVa	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.
	○ Mentoring students and guiding club to maintain a healthy Machine learning culture in the college.
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 IIT Madras), 52nd (at IIT Guwahati) & 53rd (at IIT Bhuwaneshwar) **Inter IIT Sports Meet** along with 4 other teammates