

Piyush Tiwary

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thebackpropogator.github.io

EDUCATION BACKGROUND

Indian Institute of Technology Patna (IIT Patna)

July. 2017-May. 2021

B.Tech, Electrical Engineering

CPI: 8.05/10

- **Relevant Topics:** Linear Algebra, Ordinary Differential Equations, Complex Analysis, Partial Differential Equations, Probability Theory and Random Process, Control Theory, Communication Systems, Digital Signal Processing.
- **MOOCs:** Algorithmic Toolbox, Algorithms on Strings, Discrete Mathematics, SQL for Data Science, Convolutional Neural Networks, Sequence Models.

PUBLICATIONS

- 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 Communication and Networks, **ICCCN**, IEEE, Honolulu, Hawaii, USA, pp. –, 2020 (h5 index: 23) Accepted.
- 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. In Proceedings of the 20th International Conference on Distributed Computing and Networking, **ICDCN'19 ACM**, 2019. "[click here to view](#)".

RESEARCH EXPERIENCE

Localization in Rayleigh Faded Environment

IIT Patna, India

Guide: Dr. Sudhir Kumar, IIT Patna, Prof. Sajal Das, Missouri University

Dec. 2019-March 2020

- 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.

Residual Network for Localization

IIT Patna, India

Guide: Dr. Sudhir Kumar, IIT Patna, Prof. Sajal Das, Missouri University

July 2019-Oct. 2019

- Proposed a novel Skip-connected Residual network for device localization in an IoT Network.
- The 2 main contribution of the work are a **Neural filter** to remove noise present in sensor readings and **Residual Neural Network** to handle device heterogeneity and it's added advantage on multi-sensor, virtually non-correlated data to give high localization accuracy.
- Work accepted at **ICCCN'20**.

Research Intern

Bangalore, India

Guide: Dr. Manish Gupta, Chair Professor IIIT Bangalore

May. 2019-July. 2019

- 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.

Hybrid Classifier for Localization

IIT Patna, India

Guide: Dr. Sudhir Kumar, IIT Patna, Prof. Sajal Das, Missouri University

May. 2018-June. 2018

- Proposed concept of **Cascaded Sequential Classifiers** for localization, consisting of a primary and a meta classifier.
- The primary classifier is supposed to extract rich features from raw data and meta classifier is used for prediction.
- Work published at **ICDCN'19** held at IISC Bangalore.

INDUSTRIAL EXPERIENCE

Software Development Intern

CapitalVia Global Research Limited - Investment Advisor

Remote (due to COVID-19)

May. 2020-Present

- Working with Research team of CapitalVia, to implement deploy-able framework for various trading strategies.
- Made a UI in Python using **Flask** & **BeautifulSoup** 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.

Crio Summer Of Doing - 2019

Crio.Do

Remote

June. 2019-July. 2019

- 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.

Projects

Smart Autobins For Aviation Industries (SAFAI)

Automatic Dustbin

IIT Patna

Jan. 2020- April. 2020

- Developed a smart dustbin in a team of 3, which can classify the wastes into one of the 3 categories (Wet Organic, Plastic, Dry Organic).
- The algorithm used a Resnet model to classify the image the waste, this algorithm is deployed on a Raspberry Pi for real time implementation.

Notes Seperator

Developer Student's Club

IIT Patna

May. 2019- July. 2019

- 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.

Crime Predictor

Data Science Course Project CS244

IIT Patna

Jan. 2019-Apr. 2019

- 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.

Celvika

ChatBot

IIT Patna

Jan. 2018

- 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

- Secured a Global Rank of **60** in Codechef July Long Challenge'19. *Jul. 2019*
- Specialist(Blue) on Codeforces and 4-star(Purple) on Codechef. *Coding*
- Ranked in top 5000 on UVa Online Judge. *UVa*
- Secured **All India Rank 4880** in JEE Advanced 2017 among **150,000** candidates. *JEE Adv.*

Skills

- **Programming Languages:** • C/C++ • Python • Julia • Haskell
- **Deep Learning Tools:** • Tensorflow • Keras • PyTorch
- **Data Analytic Softwares:** • SQL • MATLAB.
- **Tools & Libraries:** • Flask • L^AT_EX

Positions Of Responsibility

Advisor

NJACK IIT Patna

IIT Patna, India

April 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.
- Mentoring students and guiding club to maintain a healthy Machine learning culture in the college.

Badminton Coordinator

Student Gymkhana IIT Patna

IIT Patna, India

Aug 2019-Present

- 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 Bhubaneswar) **Inter IIT Sports Meet** along with 4 other teammates