Pankayaraj . P - BSc Computer Engineering

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Employment History

2023-Current — **Teaching Assistant** (CMSC742: Algorithms in Machine Learning: Guarantees and Analyses. Instructor: Prof Furong Huang) Department of Computer Science, University of Maryland, USA

2023-2023 - 7 months — **Research Assistant** Advisor: Prof. Furong Huang. Department of Computer Science, University of Maryland, USA
- Worked on diverse reinforcement learning
- Work under review at ICLR 2024

2022-2022 - 4 months — **Teaching Assistant** (CMSC320: Introduction to Data Science. Instructor: Prof. Maksym Morawski) Department of Computer Science, University of Maryland, USA

2022-2022 - 7 months — **Research Engineer** Singapore Management University (SMU)
- Worked on Constraint Reinforcement Learning in Hierarchical Settings
- Work was published on AAAI 2023.

2020-2021 - 14 months — **Collaborator** Flowers Laboratory, ENSTA Paris.
- Working on the ways to improve continual offline reinforcement learning with artificial curiosity
- Work was published on Cognitive Computational Journal 2023

2020-2021 - 12 months — **Research Assistant** SLTC, QBITS Lab.
- Working on task specialization in the context of multi agent multi goal reinforcement learning

2019-2019 - 5 months — **Research Assistant Intern** SLTC, QBITS Lab.
- Worked on devising communication strategies for multi agent multi arm bandit problems in both normal and delayed reward settings.
- Works were published on IEEE CDC 2020 and ECC 2020 respectively.

Education

2022-2027 — **PhD Computer Science**, Department of Computer Science, University of Maryland, USA. **GPA:** 3.8 out of 4.0
ADVISOR: **Prof Furong Huang**

2015-2020 — **B.Sc. Computer Engineering** University of Peradeniya, Sri Lanka **GPA:** 3.5 out of 4.0

English Proficiency — **TOFEL**: **112**, Reading: **29**, Listening: **30**, Writing: **26**, Speaking: **27**

Research Publications

Conference Proceedings

1. **Pankayraj P**, Rodríguez, N. D., & Ser, J. D. (2023). Using curiosity for an even representation of tasks in continual offline reinforcement learning, In ***Cognitive Computation Journal*** *2023* ***Impact Factor : 5.4***.
2. **Pankayaraj P**, & Varakantham, P. (2022). Constrained reinforcement learning in hard exploration problems [**Accepted**], In ***37th AAAI Conference on Artificial Intelligence*** *Washington, D.C. USA* ***Acceptance rate : 19.6 %***.
3. **Pankayaraj. P**, & Maithripala, D. H. S. (2020). A decentralized communication policy for multi agent multi armed bandit problems [**Presented**], In ***European Control Conference 2020***, *Saint Petersburg, Russia* ***Acceptance rate : 58%***.
4. **Pankayaraj P**, Maithripala, D. H. S., & Berg, J. M. (2020). A decentralized policy with logarithmic regret for a class of multi-agent multi-armed bandit problems with option unavailability constraints and stochastic communication protocols [**Presented**], In ***59th IEEE Conference on Decision and Control***, *Jeju Island, Republic of Korea* ***Acceptance rate : 52.7%***.
5. Jayatilaka, G., Weligampola, H., Sritharan, S., **Pankayraj Pathmanathan**, Ragel, R., &], I. N. [(2019). Non-contact infant sleep apnea detection [**Presented**], In ***ICIIS 2019*** *Sri Lanka*.

Under Review

1. **Pankayaraj P**, & Huang, F. (2023). *SDM-RL: Steady-State Divergence Maximization for Robust Reinforcement Learning* ***Under Review***, *in the* ***12 th International Conference of Learning Representations (ICLR 2024)***.

Symposiums

1. **Pankayaraj P**, Sumanasekera, Y., Samarasinghe, C., Elkaduwe, D., Jayasinghe, U., & Maithripala, D. H. S. (2020). *Multi-agent reinforcement learning in sparsely connected cooperative environments[* ***Presented****, awarded the* ***Best Research Paper****], in* ***ESCaPe 2020***, *Sri Lanka*.

Preprints

1. **Pankayaraj P**, Sumanasekera, Y., & Samarasinghe, C. (2019). *A review on reinforcement learning based autonomous quadcopter control*.

Academic Volunteering

2020 **Peer Reviewer : Journal** IEEE Transactions on Communications
- Impact Factor : 5.69 (2018)

Projects

2023 **Efficient Exploration in Reinforcement Learning** Improving the sample efficiency in RL where entropy of occupancy measure is used as an exploration mechanism
Report `https://drive.google.com/file/d/1ESQZunSYI8WegsgiQ63HJmHgUXHIF1LU/view?usp=sharing`

Projects (continued)

- **Virtual Maze Navigation Using Different Locomotion Techniques** Analysing the effects of Redirected Walking and Steering in VR environments and proposing a hybrid locomotion technique.
  Report https://drive.google.com/file/d/11JiiJo0ZzJLbtfumzjThmq3Yp0BEG1pF/view?usp=sharing

2019

- **Reinforcement Learning Based Autonomous Quadcopter Control**
  Using Reinforcement Learning algorithms to make Quadcopter control decisions on an AirSim simulated environment

  REPORT: https://drive.google.com/drive/folders/16Ej8XL4SRrtHl58FsMMnYDaD5WYWruF9

2018

- **A user recommendation method using Bayesian Reinforcement Learning**
  Github Link : https://github.com/pankayaraj/sitnshop/tree/BackEndAlgorithm
  REPORT : https://drive.google.com/drive/folders/19Sq1UExeANUWQGGVf8EXBCrPRntAFvaF

2017

- **Creating a python based library with a Tensor flow back end for Bayesian Optimization and Multi Arm Bandit Problem**
  GitHub Link : https://github.com/pankayaraj/Multi-Arm-Bandit-Library
  PyPi link : https://pypi.python.org/pypi/mabandit/1.3
  REPORT:https://drive.google.com/drive/folders/1H2Pcbfj825LPbYjo3rnKlY0lgRQCFwXb

2018

- **SitnShop– An Advertising platform for shops** An advertising platform for anykind of shop and it also helps the customers of the shops to easily find related shops.
  Github Link : https://github.com/pankayaraj/sitnshop/
  REPORT : https://drive.google.com/drive/folders/1ZcsJkFPDCJhvh8kOyt0LjnxBkJ1cAgaB

- **Infant Sleep Apnea detection system : A portable device that can detect Sleep Apnea condition in infants using techniques such as Optical flow, Edge detection, Fourier analysis with python, Raspberry pi.**
  Github Link : https://github.com/pankayaraj/Sleep_Apnea_Detection
  REPORT:https://drive.google.com/drive/folders/17fLXhj1uxl5MuqNqEM46_tYuRsWoXC2Z

- **Making a central server for the sleep apnea problem**
  Technologies : Python, Django, Django rest framework, HTML/CSS,JS
  Github Link: https://github.com/pankayaraj/Django_Server_Sleep_Apnea

2017

- **ExpertMiner :**
  Earth resource location prediction using Hyper Spectral Images from satellites Techniques : Pattern Recognition, Correlation Mapping
  Github Link : https://github.com/pankayaraj/HSI_Project

Skills

Languages	English (**TOFEL**: **112**, Reading: **29**, Listening: **30**, Writing: **26**, Speaking: **27**), Tamil(Native).
Coding	Python , Java, , LaTeX, C++, C, Matlab
Libraries	Tensorflow, Pytorch, Kivy, Numpy, Scipy
Web Dev	Dijango

Skills (continued)

Intrested Fields — Reinforcement Learning, Deep Learning, Machine Learning, Statistics and Probability, Bayesian Models, Numerical Computation, Algorithmic Problem Solving, Web and GUI development

Misc. — Academic research

Miscellaneous Experience

Awards and Achievements

2017 — **ACES Hackathon 2017(Intra university hackathon)** : Project:Expert miner: Softwaresection winners, Best idea of the competition

2016 — **ACES Coders v6.0** (Inter university programming competition):Country Rank : 4th

IEEExtreme 10.0 Programming competition(24 hour Global Programming competition
Country Rank: 38th
World Rank: 330th

References

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Professor of Computer Science
School of Computing and Information Systems, Singapore Management University,
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