

# Pankayaraj . P - BSc Computer Engineering

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🌐 <http://pankayaraj.github.io>

🌐 <https://www.linkedin.com/in/pankayaraj-pathmanathan-259926119/>

## Employment History


- 2022-Current  **Research Assistant** Advisor: Prof. Furong Huang. Department of Computer Science, University of Maryland, USA
- 2022-2022 - 4 months  **Teaching Assistant** (CMSC320: Introduction to Data Science) Department of Computer Science, University of Maryland, USA
- 2022-2022 - 7 months  **Research Engineer** Singapore Management University (SMU)
  - Working on Constraint Reinforcement Learning in Hierarchical Settings
- 2020-2021 - 14 months  **Collaborator** Flowers Laboratory, ENSTA Paris.
  - Working on the ways to improve continual offline reinforcement learning with artificial curiosity (Manuscript Under Finalization)
- 2020-2021 - 12 months  **Research Assistant** SLTC, QBITS Lab.
  - Working on task specialization in the context of multi agent multi goal reinforcement learning
  - Continual Offline 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.

## Education

- 2022-2027  **PhD Computer Science**, Department of Computer Science, University of Maryland, USA.  
ADVISOR: **Prof Furong Huang**
  - 2015-2020  **B.Sc. Computer Engineering** University of Peradeniya, Sri Lanka 3.5 out of 4 GPA
  - 2002-2014  Sri Koneshwara Hindu College Trincomalee.
- English Proficiency  **TOFEL: 112**, Reading: **29**, Listening: **30**, Writing: **26**, Speaking: **27**

## Research Publications

### Conference Proceedings

-  **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 %.**

- 2 **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%**.
- 3 **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%**.
- 4 Jayatilaka, G., Weligampola, H., Sritharan, S., **Pankayaraj Pathmanathan**, Ragel, R., & ], I. N. [ (2019). Non-contact infant sleep apnea detection [**Presented**], In *ICIIS 2019 Sri Lanka*.

## Under Review

- 1 **Pankayaraj Pathmanathan**, Rodríguez, N. D., & Ser, J. D. (2022). *Using curiosity for an even representation of tasks in continual offline reinforcement learning*.


## 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)  
 - Done during the undergraduate period







## Projects

- 2020  **Multi-Agent Reinforcement Learning in Sparsely Connected Cooperative Environments** Dealing with the sparse connectivity in multi agent settings.  
 Report <https://drive.google.com/drive/folders/1JtL88fSC-4xC1kBv4ZEm2rQhojSanBDz>
- 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/punk95/sitnshop/tree/BackEndAlgorithm>  
 REPORT : <https://drive.google.com/drive/folders/19Sq1UExeANUWQGGVf8EXBCrPRntAFvaF>

## Projects (continued)


- 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/punk95/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/punk95/sitnshop/>  
REPORT : <https://drive.google.com/drive/folders/1ZcsJkFPDCJhvh8k0yt0LjnxBkJ1cAgaB>
-  **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/punk95/Sleep\\_Apnea\\_Detection](https://github.com/punk95/Sleep_Apnea_Detection)  
REPORT:[https://drive.google.com/drive/folders/17fLXhj1uxl5MuqNqEM46\\_tYuRsWoXC2Z](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/punk95/Django\\_Server\\_Sleep\\_Apnea](https://github.com/punk95/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/punk95/HSI\\_Project](https://github.com/punk95/HSI_Project)

## Skills

- Languages  English (TOFEL: 112, Reading: 29, Listening: 30, Writing: 26, Speaking: 27), Tamil(Native).
- Coding  Python , Java , ,  $\text{\LaTeX}$ , C++, C, Matlab
- Libraries  Tensorflow, Pytorch, Kivy, Numpy, Scipy
- Web Dev  Django
- 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

## Miscellaneous Experience (continued)

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- **IEEEExtreme 10.0 Programming competition**(24 hour Global Programming competition  
Country Rank: 38th  
World Rank: 330th

## References

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### **Prof Pradeep Varakantham**

Professor of Computer Science  
School of Computing and Information Systems, Singapore Management University,  
Singapore.  
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### **Dr D.H.S Maithripala**

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Peradeniya, Sri Lanka.  
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### **Dr Natalia Díaz-Rodríguez**

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