Aishwarya Jayagopal

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EDUCATION

- **Doctor of Philosophy, Information Systems and Analytics** *4.94/5*
  National University of Singapore, Singapore Aug 2022 - Present
  - Thesis topic: AI for data-scarce settings with applications in precision oncology
  - Thesis Advisor: Dr. Vaibhav Rajan

- **Master of Computing** *4.81/5*
  National University of Singapore, Singapore Jan 2021 - Jun 2022
  - Capstone: Leveraging Multi-View Neural Representation Learning Methods for Biomedical Applications
  - Capstone Advisor: Dr. Vaibhav Rajan

- **Bachelor of Technology** *9.95/10*
  Amrita School of Engineering, Amrita Vishwa Vidyapeetham, India Aug 2012 - May 2016
  - Awarded gold medal for 1st rank at the university level.

WORK EXPERIENCE

- **Oracle India Private Limited** *Jul 2016 - Nov 2020*
  Cloud Application Engineer Hyderabad, India
  - **Cloud Provider Migration**: Facilitated the migration of Aconex from AWS to Oracle Cloud Infrastructure, using Puppet, Ansible and Terraform.
  - **Oracle Linux Version Migration**: Orchestrated the application of security patches, scaling of instances and migration of Oracle Linux version on Oracle Primavera and Prime technology stacks, using Chef Server.
  - **Certifications**: Certified Oracle Cloud Infrastructure Architect Associate and Professional.

- **Oracle India Private Limited** *Jan 2016 - Jul 2016*
  Project Intern Hyderabad, India
  - **Log Monitoring**: Performed log monitoring and analysis of Oracle Primavera Unifier using ElasticSearch, Logstash, Kibana (ELK) stack.

PUBLICATIONS AND POSTERS C=CONFERENCE, J=JOURNAL, P=POSTERS, W=WORKING PAPERS

Conferences

[C.1] **Jayagopal A**, Xue H, He Z, Walsh RJ, Hariprasannan KK, Tan DS, Tan TZ, Pitt JJ, Jeyasekharan AD, Rajan V. Personalised Drug Identifier for Cancer Treatment with Transformers using Auxiliary Information. *In Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining* **KDD 2024** (pp. 5138-5149); *Acceptance rate 20%*; ✇ ⌨.

[C.2] Shubham K, **Jayagopal A**, Danish SM, AP P and Rajan V. WISER: Weak Supervision and Supervised Representation Learning to Improve Drug Response Prediction in Cancer. *In Proceedings of the 41st International Conference on Machine Learning* **ICML 2024** (pp.235:45228-45243); *Acceptance rate 27.5%*; ✇ ⌨.

Journals

[J.1] Walsh RJ, Ong R, Cheo SW, Low PQ, **Jayagopal A**, Lee M, Ngoi N, Ow SG, Wong AL, Lim SE, Lim YW. Molecular profiling of metastatic breast cancer and target-based therapeutic matching in an Asian tertiary phase I oncology unit. **Frontiers in Oncology**. 2024 May 15;14:1342346; *Impact Factor 4.0*; ✇.

[J.2] Liany H, **Jayagopal A**, Huang D, Lim JQ, Nbh NI, Jeyasekharan A, Ong CK, Rajan V. ASTER: A Method to Predict Clinically Relevant Synthetic Lethal Genetic Interactions. **IEEE JBHI** Journal of Biomedical and Health Informatics. 2024 Jan 16; *Impact Factor 7.1*; ✇ ⌨.

[J.3] Mariappan R, **Jayagopal A**, Sien HZ, Rajan V. Neural Collective Matrix Factorization for integrated analysis of heterogeneous biomedical data. **Bioinformatics**. 2022 Oct 1;38(19):4554-61; *Impact Factor 7.6*; ✇ ⌨.

[J.4] Dasgupta S, **Jayagopal A**, Hong AL, Mariappan R, Rajan V. Adverse drug event prediction using noisy literature-derived knowledge graphs: algorithm development and validation. **JMIR Medical Informatics**. 2021 Oct 25; 9(10): e32730; *Impact Factor 3.5*; ✇ ⌨.

Posters

[P.1] Jiahui NR, **Jayagopal A**, Jeyasekharan AD and Rajan V. Cancer Drug Response in Patients via Semi-supervised Deep Co-training. TransMed COSI, *32nd Conference on Intelligent Systems for Molecular Biology* **ISMB 2024**.

[P.2] Walsh RJ, **Jayagopal A**, Tan TZ, Pitt J, Sundar R, Lee SC, Goh BC, Rajan V, Tan DS, Jeyasekharan AD. 229TiP A phase II trial of a neural network-based treatment decision support tool in patients (pts) with refractory solid organ malignancies. *European Society for Medical Oncology* **ESMO 2024**; ⅋.

[P.3] **Jayagopal A**, Jing L, Aminkeng F, Ngiam KY and Rajan V. Unsupervised discovery of biomedical associations from clinical and auxiliary data. *Conference on Health IT and Analytics* **CHITA 2023**.

Working Papers

[W.1] **Jayagopal A**, Walsh RJ, Hariprasannan KK, Mariappan R, Mahapatra D, Jaynes PW, Lim D, Tan DS, Tan TZ, Pitt JJ, Jeyasekharan AD and Rajan V. A multi-task domain-adapted model to predict chemotherapy response from mutations in recurrently altered cancer genes. medRxiv. 2023:2023-11; Under review at the **Cell iScience journal**; ⅋ ☉.

[W.2] **Jayagopal A**, Zhang Y, Walsh RJ, Tan TZ, Jeyasekharan AD and Rajan V. Diffusion model based data augmentation and predictive modeling framework for personalized cancer treatment; Under review.

[W.3] **Jayagopal A**, Zhang Y and Rajan V. A systematic survey of transfer learning based personalized drug response prediction models for cancer patients.

HONORS AND AWARDS

- Awarded the NUS School of Computing **Research Achievement Award** in recognition of significant research achievements in the Academic Year 2023/24.

- Recipient of **National University of Singapore Research Scholarship**, awarded a monthly stipend and full tuition fee subsidy, in recognition of prior academic achievements.

- Awarded **National University of Singapore MComp Study Award** in recognition of previous achievements, towards the completion of Master of Computing degree.

- Named **Employee of the Month** at Oracle India Construction and Engineering Global Business Unit, for successfully orchestrating security patch and Linux updates on Oracle Primavera Prime production environments.

- **Gold medal winner** at Amrita Vishwa Vidyapeetham, Electronics and Communication Engineering, Class of 2016, for ranking 1st at the university level.

RELEVANT ACADEMIC PROJECTS

- **Personalized Cancer Treatment Recommendation Systems**   [⊕ pharmacope.ai., Clinical trial: NCT05719428]
  ◦ Developed deep learning approaches that provide personalized anti-cancer drug recommendations for patients using clinical genomic profiles; under evaluation via clinical trial at the National University Hospital, Singapore.

- **Multimodal Book Genre Classification**   [⅋, ☉]
  ◦ Built a multimodal representation learning algorithm, to utilise cover art images and textual book descriptions for downstream book genre classification, achieving significant performance improvement over existing baselines.

- **Chain of Thought Evaluation for Healthcare Large Language Models**   [☉]
  ◦ Proposed a metric, CAFA, that evaluates contextual and factual reasoning ability of LLMs in medical question-answer tasks, by leveraging medical knowledge graphs instead of human expert evaluation.

- **Drug Response Prediction in Cell Lines**   [☉]
  ◦ Formulated a cancer drug response prediction algorithm for laboratory based cell line datasets, using heterogeneous graph neural networks to incorporate knowledge from biomedical databases.

- **Polypharmacy Side Effect Prediction**   [⅋, ☉]
  ◦ Leveraged matrix factorization and graph machine learning based models to predict side effects arising from simultaneous consumption of drugs.

RELEVANT COURSEWORK

Image Processing, Neural Networks and Deep Learning, Uncertainty Modelling in AI, Topics in Machine Learning and Optimization, Advanced Topics in Artificial Intelligence, Machine Learning, Data Mining.

ACADEMIC SERVICE

- Reviewer for the *International Conference on Information Systems* (ICIS) - 2023 and 2024.

- Student Volunteer for *NUS School of Computing* Research Week 2023 and Open House 2024.

INVITED TALK

- Invited speaker at the **MComp General Track Project Expo**, NUS School of Computing, September 2024. Talk title: *Artificial Intelligence for Cancer treatment recommendation*.

SKILLS

Proficient
- **Languages**: Python
- **Libraries**: PyTorch, Scikit-learn
- **Cloud Providers**: Oracle Cloud Infrastructure
- **DevOps**: Puppet, Ansible, Chef
- **Others**: LaTeX

Intermediate
- **Languages**: C, C++, JavaScript
- **Libraries**: Deep Graph Library
- **Web Development**: React, HTML, CSS
- **DevOps**: Terraform
- **Others**: Linux, Wandb, Git, Docker