

Short Description:

We are looking for a postdoctoral researcher to work with us on an exciting collaboration between the Bioinformatics Institute (BII), the Institute for Infocomm Research (I2R) and Singapore General Hospital. The objective is to design an AI model that can help hospitals by learning from our dataset which contains a large set of cancer types to perform a diverse set of diagnostic tasks such as cancer grading and gland segmentation. Prior experience in deep learning is not required although candidates with deep learning experience are welcome. Join us if you are excited about improving the quality of healthcare and interested in learning AI skills. Please send your interest and CV to Mahsa Paknezhad (mahsap@bii.a-star.edu.sg) and Eddy Tan (eddy_tan@bii.a-star.edu.sg).

Long Description:

Position: Postdoctoral Research Fellow position for developing an AI model to learn heterogeneous tasks in parallel. An application to digital pathology.

Project Description: Training deep learning (DL) models on multiple heterogeneous tasks is one of the main steps in the direction of offering robust and generalizable AI solutions. We are seeking a postdoctoral research fellow to participate in an exciting collaboration between the Bioinformatics Institute (BII), the Institute for Infocomm Research (I2R) and Singapore General hospital. The aim is to design an AI model that can help hospitals by learning a diverse set of diagnostic tasks such as breast cancer grading and prostate gland segmentation as tasks are introduced through time. An AI model that is sufficiently smart to optimise the required network resources and to reduce the necessary dataset size to deliver a desirable performance for each task. To achieve these objectives the proposed AI model should be novel in many aspects. For instance, it should automatically decide which part of the network to assign to a new task, it should automatically expand itself if necessary to learn a new task, it should find similarities between tasks and share resources between similar tasks and it should avoid sharing resources between dissimilar tasks. We look for a creative mind with strong communication skills. A team player who can lead the project from forming ideas, to development, analysis and publishing results in top-tier journals.

What is in it for you? You will be working in a team of AI researchers who have a deep understanding of the fundamentals of deep learning and have considerable experience in applying deep learning to different problems. You will have the opportunity to learn and hone your AI skills through this project as well as by learning from other on-going projects in the team. You will acquire a deep knowledge of the cutting edge techniques in continual learning, reinforcement learning, and image processing. You will also learn to sharpen your communication, collaboration, project management and leadership skills.

Responsibilities:

- (1) Maintain multiple histopathology datasets belonging to different healthcare problems
- (2) Work closely with clinicians to fully understand the healthcare problems and the histopathology datasets
- (3) Develop a novel AI algorithm that can expand (if necessary) and train parts of a neural network on different healthcare problems in parallel while providing efficiency in terms of task performance and network resources
- (4) Carefully design experiments for assessment of the proposed AI algorithm
- (5) Collaborate with peers, supervise interns and research officers
- (6) Periodically present the progress to the group and submit the research findings to top-tier journals and conferences

Requirements:

- (1) PhD in areas such as Computer Science, Machine Learning, Deep Learning, Computer Vision, Mathematics, Probabilities
- (2) Sufficient experience in programming in python
- (3) Familiarity with PyTorch or Tensorflow libraries is NOT REQUIRED but would be a plus
- (4) Prior knowledge in deep learning is NOT REQUIRED but would be a plus
- (5) Familiarity with Reinforcement Learning is NOT REQUIRED but would be a plus
- (6) Good verbal and written communication and troubleshooting skills
- (7) Curious, detail oriented, and analytical, with a proven ability to learn quickly
- (8) A team player who is willing to share ideas and knowledge with peers

For more information, please visit the CVPD websites: <http://web.bii.a-star.edu.sg/~leehk/> and <https://www.a-star.edu.sg/bii/research/ciid/cvpd>