Avinash Ranganath

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EDUCATION

University Carlos III of Madrid, Leganes, Madrid, Spain

- Ph.D in Electrical, Electronics and Automation Engineering — Sep 2013 – Oct 2016
  - Thesis: Locomotion through Morphology, Evolution and Learning for Legged and Limbless Robots
  - Adviser: Prof. Luis Moreno
  - Research areas: Robot locomotion, modular robotics, reinforcement learning, morphological computation, evolutionary robotics
- Master in Robotics and Automation — Oct 2011 – Jun 2013
  - GPA: 8.8 / 10.0

University of Edinburgh, Edinburgh, Scotland, UK

- Master of Science (MSc.) in Artificial Intelligence — Sep 2008 – Nov 2009
  - Specialisation: Intelligent Robotics
  - Received University of Edinburgh International Masters Scholarship

Bangalore University, Bangalore, Karnataka, India

- Bachelor of Computer Applications — Jun 2001 – Jun 2004

WORK EXPERIENCE

Freelance Data Scientist, Stockholm, Sweden — Jan 2021 – Present

- Built a library for ETL of financial data
- Developed an ML model for predicting mineral deposits based on geochemical data
- Trained an RL agent for optimizing warehouse management
- Built an RL based automated options trading bot
- Trained Multi-Agent RL for finding optimal expansion strategies between competing firms while expanding internationally

Accenture India, Bangalore, India

- Software Engineer — Sep 2005 – Jul 2008
  - C++ developer in telecom domain

RESEARCH EXPERIENCE

School of Computing, Clemson University

- Postdoctoral Research Scientist — Dec 2018 – Dec 2020
  - Project: Research on virtual character control using Deep Reinforcement Learning (DRL)
  - Supervisors: Dr. Victor Zordan and Dr. Ioannis Karamouzas
  - Research areas: Character control, motor-skill Learning, locomotion, DRL

School of Computer Science and Communication, KTH

- Research Engineer at Robotics, Perception, and Learning Lab — Jan 2017 – Aug 2018
  - Project: Research on deep learning techniques for semantic mapping of indoor environment through a mobile robot
  - Development of an open-source library called *LibSPN* for inference and learning in Sum Product Networks
  - Supervisor: Dr. Andrzej Pronobis
  - Research areas: Deep Learning, SPN

Department of Systems Automation and Engineering, UC3M

- Research Assistant, Robotics Lab — May 2010 – May 2015
  - Project: Research on distributed locomotion controllers for modular robots
  - Supervisor: Professor Luis Moreno
  - Research areas: Robot locomotion, modular robotics, reinforcement learning, morphological computation, evolutionary robotics

IT University of Copenhagen

- Visiting Research Student, Software & Systems Section — Aug 2013 – Sep 2013
  - Project: Investigate relationship between the morphology and emergence of behavior, in the context of robot locomotion
  - Supervisor: Prof. Kasper Stoy
  - Research areas: Robot locomotion, morphological computation, quadruped gait

Intelligent Process Control and Robotics, Karlsruhe Institute of Technology

- Visiting Research Student, Collective and Microrobotics Group — May 2009 – Aug 2009
  - Project: *Symbrion* - Developed a Digital Hormone Method based distributed locomotion and navigation controller for modular robots
  - Supervisor: Dr. Marc Szymanski
  - Research areas: Modular robotics, collective intelligence, Digital Hormone Method

TEACHING EXPERIENCE

Graduate Level, Clemson University

- CPSC 8810: Motion Planning — Spring 2020
  - As a guest lecturer, I taught the DRL part of the course

Undergraduate Level, UC3M

- I was a teaching assistant for the following courses: — 2010 – 2015
  - Industrial Informatics (15694)
  - Industrial Automation (13976)
  - Computer Organization (13885)
  - Computer Architecture (13888)

Advisor Undergraduate Thesis

- Learning locomotion gait through hormone-based controller in modular robots — June 2014
  - David Estévez Fernández, Bachelors, UC3M

PUBLICATIONS

JOURNAL

[1] A. Brunete, A. Ranganath, S. Segovia, J. Perez de Frutos, M. Hernando and E. Gambao, "Current trends in reconfigurable modular robots design", in *International Journal of Advanced Robotic Systems, 14(3)*, DOI: 10.1177/1729881417710457, 2017.

CONFERENCE & WORKSHOP

[2] A. Ranganath A. Biswas, I. Karamouzas, and V Zordan, "Motor Babble: Morphology-Driven Coordinated Control of Articulated Characters", in *Motion, Interaction and Games, 2021*, Lausanne, Switzerland, Nov 2021.

[3] A. Ranganath P. Xu, I. Karamouzas, and V Zordan, "Low Dimensional Motor Skill Learning Using Coactivation", in *Motion, Interaction and Games, 2019*, Newcastle, UK, Oct 2019.

[4] A. Pronobis, A. Ranganath and RP. Rao, "LibSPN: A Library for Learning and Inference with Sum-Product Networks and TensorFlow", in *Workshop on Principled Approaches to Deep Learning, ICML 2017*, Sydney, Australia, Aug 2017.

[5] A. Ranganath and L. Moren, "Gait generation through a feature based linear periodic function", in *Mediterranean Conference on Control and Automation (MED)*, Torremolinos, Spain, Jun 2015.

[6] A. Ranganath, J. Gonzalez-Gomez and L. Moren, "Morphology Dependent Distributed Controller for Locomotion in Modular Robots", in *Post-Graduate Conference on Robotics and Development of Cognition*, Lausanne, Switzerland, Sep 2012.

[7] A. Ranganath, J. Gonzalez-Gomez and L. Moren, "A distributed neural controller for locomotion in linear modular robotic configurations", in *Proceedings of the 8th Workshop of RoboCity2030*, Madrid, Spain, May 2011.

ACADEMIC AWARDS

- International Masters Scholarship, University of Edinburgh — 2008
  Awarded in support of postgraduate studies. One among only five in the department to receive the award
- Runner-up, Best student project, Pompeu Fabra University — Sep 2011
  Awarded for student project at the end of Barcelona cognition, brain and technology summer school
- JSE Achievers Award, Accenture India — Sep 2006
  Awarded for exceptional performance during the first year of employment at Accenture India

LANGUAGES

- English: Native or bilingual proficiency.
- Kannada: Native language.

SKILLS C/C++, Python, TensorFlow, PyTorch Git.

[*CV compiled on 2023-01-28*]