

Gaya Nadarajan

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PROFILE

- **Lecturer of core courses in Data Science at Sungkyunkwan University (SKKU)**
- **Extensive teaching, research and industrial experience for over 20 years**
- **Lead scientist in a European big data project and AI startups in South Korea**
- **Passionate about imparting knowledge and communicating ideas**

EDUCATION

Ph.D. Informatics	2011	The University of Edinburgh, U.K.
M.Sc. Artificial Intelligence	2005	The University of Edinburgh, U.K.
B.A. Computer Science	1999	Trinity College, Dublin, Ireland

WORK EXPERIENCE (RESEARCH & DEVELOPMENT)

1) Associate Professor, Sungkyunkwan University, Seoul, Korea **March 2019 – present**

Courses:

Spring 2019 –	Introduction to Artificial Intelligence, Data Science & R
Summer 2019, 2022	Artificial Intelligence (International Summer School)
Autumn 2019 – 2021	Introduction to Deep Learning, Database Management 2
Spring 2020 – 2022	Introduction to AI for Humanities
Spring 2022 –	Deep Learning 1: Foundations and Image Processing
Autumn 2022 –	Deep Learning 2: Natural Language Processing, Relational Databases
Autumn 2023 –	Ethical and Social Impact of Data

2) Chief Technical Officer, BioAI, Seoul, Korea **Nov 2018 – Feb 2019**

I assisted with securing funding from the Korean government to start up an AI consultancy firm that provides the following services to biomedical institutions:

- Drug development database integration
- Platform and server provisions for deep learning applications
- Customised consultation on suitable AI solutions for biomedical applications

3) Senior Scientist, Standigm, Seoul, Korea **Mar 2016 – Jul 2017**

Standigm combines artificial intelligence and systems biology to reduce the time and cost of drug repositioning dramatically. My notable contribution is in data modelling and management of drugs, proteins and diseases from an integrated source of fourteen major public databases into a visual graph database. This was followed by the incorporation of new fields such as Anatomical Therapeutic Chemical (ATC) codes. I also managed an intern from Seoul National University who was applying deep learning for computational drug repurposing.

Projects: Subgroup prediction identification (Python), Graph database management and integration (Neo4j, Cypher), Semantics-based drug repositioning (Java, OWL2)

4) Senior Researcher, Seoul National University, Korea **Oct 2014 – Dec 2015**

As a member of the Biomedical Knowledge Engineering (BiKE) Lab, I was responsible to lead biologists and medical researchers in using semantics-based technologies in biomedical analysis. I assisted in the modeling of mutation analysis for epigenomics as an AI planning problem, contributing towards the development of a research support platform based on linked omics data in the BioLOD project.

5) Research Associate, University of Edinburgh, U.K.

Nov 2010–Oct 2013

Lead developer & researcher of workflow unit of the Fish4Knowledge (F4K) project¹

- Designed project ontologies that represent high level goals (tasks), environment and video descriptions and software capabilities. Interfaced ontologies with UN FAO's Fisheries ontology, consequently the ASFIS list of species was updated.
- Implemented a standalone workflow component that automatically binds high-level video processing queries to low-level image processing components.
- Scheduled thousands of on-demand workflow tasks on heterogeneous distributed resources based on their priorities and compute-intensity of the software modules. Included error detection and handling.
- Integrated F4K's user interface with other partner components for prototype demonstration to project reviewers.

Technical Skills: Python, HTN Planning (SWI Prolog), Ontologies (OWL), Oracle (Sun) Grid Engine, Load Sharing Facility (LSF), Database communication (MySQL).

6) Software Engineer, Altion Limited, Dublin, Ireland

Sept 1999 – Sept 2002

Network management solutions provider for telecommunications client.

Projects:

- Data extraction from spreadsheet to Oracle importable format (Perl scripting)
- Creating, routing and equipping VC-12 path trails for Data-Synchronisation
- Reporting application for Digital Distribution Frames (Java, C)
- Interfacing client and server database for querying fault correlation (C, SQL)
- Acceleration Service Provisioning: C application to interface two databases
- Interfacing Fujitsu-Fens system with local system using RPC for alarm detection

CONSULTANCY

Hibiscus Petroleum Berhad (2017 – 2018), BioAI (2020 – present)

ADDITIONAL TEACHING EXPERIENCE

Teaching assistant, tutor, lab demonstrator, mentor University of Edinburgh 2004 – 2010

System design project, Functional Programming, Computation & Logic, Data and Analysis, Object Oriented Programming, Software Engineering with Objects and Components, Informatics Research Review

SELECTED TALKS & PUBLIC ENGAGEMENT

- Applications and Impact of AI to Society. International Symposium on Library Services for Children and Young Adults, Seoul (July 2022)
- My Journey in the World of Computing. 17th Global Youth Academy Program, Daegu (Apr 2022)
- Guest lecture, Data Science & Management, ISS, Sungkyunkwan University, Korea (July 2018)
- Heriot-Watt University, U.K. (Jan 2016)
- 2nd Korea-China Symposium on Big Data, Daegu (Oct 2015)
- National Applied Research Lab, Taiwan (July 2012, March 2013)

Academic Service: Reviewer for Journals and Conferences

Journal of Software Maintenance and Evolution, IEEE Conf. Intelligent Agent Technology, CCGRID, Euro-Par Conference, KES-AMSTA, Journal of Cognitive Science

Languages: English (native), Malay (native), Korean (intermediate)

¹ European Commission FP7 grant 257024