Denamganaï Kevin

IGGI Phd Student

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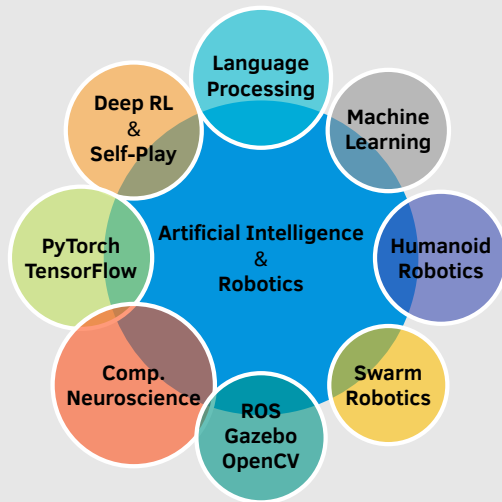
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Skills

Overview

Programming

C • C++ • Python • LaTeX

Java • Mathematica

Language

French - Native
English - Bilingual (**TOEFL 105**)
German - Conversant
Japanese - Conversant

Projects

ReferentialGym - Language Emergence and Grounding in Referential Games.
Regym - A Single-Agent and Multi-Agent / Self-Play Deep Reinforcement Learning framework.
RelationalReasoning - Implementations of (Deep) Relational Reasoning algorithms, using PyTorch.
PyTorch_VAE - Replication of many Disentangling β-VAE variants .
GazeboDomainRandom - Domain Randomization tools for object recognition.
HaRo - 3D printable MG995-based Raspberry Pi-powered humanoid robot.

Education

2018 - Present **PhD Student, Intelligent Games and Game Intelligence (IGGI)**
University of York, United Kingdom

2013 - 2017 **Engineer Degree, Computer Science and Systems**
Ecole Nationale Supérieure de l'Electronique et de ses Applications, France

2015 - 2017 **Research MSc., Artificial Intelligence and Robotics**
Université de Cergy-Pontoise, France

2016 - 2017 **MEng., Electrical Engineering and Information Science** (GPA: 3.7/4)
Osaka Prefecture University, Japan

Certifications

2017 **Deep Learning Foundation Nanodegree** - Udacity

2015 **Underactuated Robotics (6.832x)** - Edx

2015 **Autonomous Mobile Robots (AMRx)** - Edx

2014 **Computational Neuroscience** - Coursera

Research

2018 - Present **IGGI PhD Student**   University of York, United Kingdom
Thesis: Emerging Languages as a Tool for Thought
- Proposed a **nomenclature for Referential Games**, in its latest resurgence in deep learning, and implemented a PyTorch-based framework designed around it, entitled ReferentialGym.
- Investigates (artificial) **language emergence and grounding** in the visual modality via Referential Games variants, and investigate the (emerging) **systematic generalisation abilities** of the neural players.
- Investigate **self-play** language emergence and grounding in visual Referential Games variants for **zero-shot human-computer cooperation**.

2015 - 2017 **Research MSc. Student**   Université de Cergy-Pontoise, France
Thesis: Visual Contexts for a Spatial Recognition System in Wide Environments

2016 - 2017 **MEng. Student**   Osaka Prefecture University, Japan
Thesis: Adaptability Features in a Nonlinear System-based Swarm of Robots

Publications

K.Denamganaï and J. Walker, **On (Emergent) Systematic Generalisation and Compositionality in Visual Referential Games with Straight-Through Gumbel-Softmax Estimator**, in *4th NeurIPS Workshop on Emergent Communication*, 2020.

K.Denamganaï and J. Walker, **ReferentialGym: A Nomenclature and Framework for Language Emergence & Grounding in (Visual) Referential Games**, in *4th NeurIPS Workshop on Emergent Communication*, 2020.

D. Hernandez, K. Denamganaï, S. Devlin, S. Samothrakis and J. A. Walker, **A Comparison of Self-Play Algorithms Under a Generalized Framework**, in *IEEE Transactions on Games (ToG)*, doi: 10.1109/TG.2021.3058898.

D. Hernandez, K. Denamganaï, Y. Gao, P. York, S. Devlin, S. Samothrakis and J. Walker, **A Generalized Framework for Self-Play Training**, in *Proceedings of the 2019 IEEE Conference on Games (CoG)*, pp. 1-8, 2019.

Experience

2020-2021 **Graduate Teaching Assistant**   University of York, Computer Science Dept.
- Mathematical Foundations of Computer Science (COM00013C)
- Formal Languages and Automata (COM00014C)
- Computability and Complexity (COM00023I)
- Introduction to Software and Systems Engineering (COM00019I)

2016-Present **Artificial Intelligence & Robotics Freelancer**   Upwork
- On-screen 2D gaze pose tracking system for hand-held devices with **PyTorch**.
- Domain randomization tools for simulation-to-reality transfer of 3D avatar-based tasks using **MakeHuman** and **Blender**.
- Car make and model classification systems using **TensorFlow** in a Semi-supervised GAN framework.
- 3D bot-human interface, using **Blender** and **Panda3D**'s Python API.
- Development of algorithms for a Roomba-like robot, using **ROS** & **Gazebo**.