Andrea Castegnaro, PhD

 @Lenakeiz   github.com/Lenakeiz   Portfolio website

Interdisciplinary researcher with a PhD in cognitive neuroscience and a background in physics and game development. Interested in bridging the gap between healthcare/education and digital technology by developing customized experience for the end user. Experience with data analysis, statistical inference, data modelling.

Education

PhD in Cognitive Neuroscience, UCL | UK   2015/2020
MSc (Distinction) in Computer Games and Entertainment, Goldsmiths University | UK   2014/2015
BSc, MSc (Distinction) Physics, University of Rome II | Italy   2006/2012

Experience

Postdoc Researcher (Cognitive Neuroscience, Unity developer)   Jan 2021 – ongoing
University College London | London, UK

- Developing a quantitative mathematical model for distinguishing different contributions to navigation errors in people at risk of Alzheimer's
- Developing a CAVE VR system using Unity to perform electrophysiology experiments on mice while performing virtual navigation tasks
  Segments include:
- Networking programming (TCP) allowing experimenter to control the task in real-time
- Unity editor customization to enable experimenter to create/setup tasks requiring only a minimum amount of code
- Low-level programming to synchronize the Unity signals with the electrophysiology recording system

Lead Unity Developer, part-time   2017 – ongoing
SoftV | London, UK

- Developed Listen-In and contributed to the Swan projects for treatment of aphasia in adults and developmental difficulties in children. Listen-In delivers 100 hours of therapy with over 30 hours of game content only. The game has been already listed in research publications reporting an increase of ~30% in listening accuracy in patients after a stroke
  Segments include:
- Designed and developed the frontend part of the game (gameplay, UI) through iterations with feedbacks from focus groups to improve user experience. Game content is based on 2D physic-based gameplay mechanics
- Design and implementation of the backend for the gaming data collection using PHP and MySQL
- Lead a small size team consisting of two artist, one game designer, one developer to manage the releases and iterations of the game
- Contributed to the SWAN project by improving research output with two additional mini-games to measure improvements while using the app. Implemented data collection and storage using PHP

Experience (continue)

PhD Researcher (Cognitive Neuroscience) 2016 – 2020
University College London | London, UK
- Managed self-led PhD research project within inter-disciplinary working group
- Conceived/designed and created three VR studies using HTC Vive to assess cognitive decline in early onset Alzheimer's disease
  Segments include:
- Designed and Implemented in game user interface. Implemented user interactions through the handheld controllers (UI/object selections). Designed and developed local backend to let clinicians customize the study properties.
- Data collection, cleansing, processing, and manipulation using Matlab, Python, R and SPSS. Statistical modelling based on ANOVA, GLM (statistics and machine learning toolbox in Matlab)
- Published results in high impact scientific journals (Google Scholar profile). One study is currently in the top 5% of all research outputs from research articles of that journal with similar age

Junior .NET developer 2013 – 2014
Electric80 S.p.A | Reggio Emilia, Italy
- Using company proprietary developed in .NET (C#) I implemented custom logic controller for automated fork-lift vehicles used for storing and shipping of goods in the client's warehouse
- Implemented custom logic for controlling two automated fork-lift vehicles moving client's goods on pallets. The algorithm needed to prioritize/choose orders from the warehouse management system to plan efficiently the routes between the fork-lift vehicles. C# / NHibernate
- Designed and added a client user interface for operators to create views of available products, print reports with snapshots of current storage capacity, create shipping orders, prioritize high-demand goods from production line. C# / Entity Framework 5 / WPF
- Development of a warehouse management system using SQL. Designed database structure using normalization principles. Created queries and automated stored procedures to view products, create shipping and automated reorganization of storage of goods in the warehouse

Publications
- Differentiation of mild cognitive impairment using an entorhinal cortex-based test of virtual reality navigation, Brain 142 (2019) 1751-1766, doi
- A fast hardware tracker for the ATLAS trigger system, Journal of Instrumentation 7 (10) 2013, doi
- Variable resolution Associative Memory optimization and simulation for the ATLAS FastTracker project, conference paper 2012, doi

Awards and Scholarships
• UCL PhD Scholarship 2016-2020 • Hack the visuals 2015 • Ukie Jam 2014 • Italian Institute of Nuclear Physics postgraduate fellowship 2011-2012 • Italian Ministry of Education merit scholarship 2006-2009

Technical Skills and Interests
Legend: proficient (p), intermediate (i), basic (b)
Programming: C# (p), SQL (p), Matlab (p), C++ (i), Python (i), R (i), PHP (b), HLSL (b), Java (b)
Software: Unity (p), MATLAB (p), SPSS (i), Blender (b)
Languages: English (p), Italian (mother tongue)

Interests: Charity runner with Goodgym. Bike tourist. Seasoned basketball player. DIY with Arduino. Amateur cook.