LENKA PITONAKOVA
CURRICULUM VITAE

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A researcher with extensive software development experience. Specialised in agent-based modelling, big data applications, games and web development. Research interests include autonomous multi-robot systems, neural networks and biologically inspired artificial intelligence. Innovative, creative and able to quickly understand new concepts.

TECHNICAL AND SOFT SKILLS

- **Object-oriented and functional programming** (C++, Objective-C, C#, C, Java, JavaScript, ActionScript, Python, PHP)
- **Database development** (PostgreSQL, MySQL) and **big data analysis**
- **Mobile app development (iOS / Android):** iOS Sprite Kit, Google maps API, Bluetooth
- **Embedded and parallel software development**
- **Web development and graphic design**: PHP (general, CodeIgniter)**,** HTML**,** CSS**,** JavaScript (JQuery, Ajax, REST, OAuth)**,** Search engine optimisation, Responsive cross-browser coding, Adobe Suite
- **Developer tools** (Unix command line, Bash scripts, git)
- **Agile software development**: Iterative coding, unit testing, communication with stakeholders
- Good working knowledge of **software design patterns** and **software carpentry** best practises
- Excellent code documentation and presentation skills

WORK EXPERIENCE

03/2018 – now **University of Bristol** **(Bristol, UK)**	**Research associate: Hybrid Autonomous Systems Engineering** Novelty detection in multi-robot systems using neural networks.
10/2017 – 02/2018 **University of West England** **(Bristol, UK)**	**Research associate: Robotics for Nuclear Environments** Collaboration on developing a C++ simulation environment for the project.
03/2017 – 03/2018 **University of Southampton &** **Bristol Robotics Laboratory** **(Bristol, UK)**	**Post-doctoral research fellow** Independent research titled Design Patterns for Robot Swarms. Working on measuring information flow and developing algorithm design principles for robot swarm foraging, using e-puck robots.
10/2015 – 02/2016 **Flowminder Foundation** **(Southampton, UK / Geneva, CH)**	**Data scientist, software developer** Employed as a Python developer with expertise in object-oriented software engineering. Worked on a large-scale application that processed mobile phone data in order to aid disaster response for the United Nations and other relief agencies.
09/2007 – 10/2017 **Various companies and freelance work**	**Software developer: Junior - senior** Worked on individual and team projects within the industry and the academia, including big-data applications, user behaviour tracking and social media applications, a large-scale PHP-based Content Management System and a number of iOS games and applications. Gained experience in the full software development cycle, team management, marketing and in communication with clients.

RESEARCH OUTPUTS AND OUTREACH ACTIVITIES

- Internationally recognised journal and conference papers, including publications in **Swarm Intelligence, Adaptive Behaviour, IROS and ALIFE** conferences (http://lenkaspace.net/info/publications)
- **Teaching and project supervision** experience with students at PhD, Masters and Bachelor's levels
- Participated in a number of **outreach activities**, including organising an international conference on complex systems, as well as various public science events and talks

RESEARCH GRANTS AND AWARDS

03/2017 – 02/2018	EPSRC Doctoral Prize Research Fellowship	£35,000
09/2012 – 02/2017	EPSRC Doctoral Training Centre Grant	£120,000
06/2008	General Motors Scholarship based on academic achievement	£1,000

SELF-FUNDED PROJECTS

- **The Hive Mind:** An educational 3D game about swarm robotics (http://thehivemindgame.net)
- **pyCreeper:** An open-source python library for plotting (http://pycreeper.lenkaspace.net)
- **Creeper:** An open-source Java framework for agent-based simulations (http://lenkaspace.net/code/java/creeper)
- **Stardust Colonies:** A strategy game with its own C++ game engine (http://stardustcolonies.lenkaspace.net)
- **UIn Library:** An open-source NXC framework for creating user interfaces on the Lego Mindstorms brick (http://lenkaspace.net/lab/legoMindstorms/nxcUserInteractionLibrary)
- **Alien Strike:** An iPhone space shooter game (http://lenkaspace.net/code/objectiveC/alienStrike)

QUALIFICATIONS

09/2012 – 01/2017
University of Southampton (Southampton, UK)

PhD Simulation of complex systems / Swarm robotics
A fully funded Doctoral Training Centre programme. My thesis title was "Design Patterns for Robot Swarms". In my research, I developed a novel way of understanding robot swarm behaviour in terms of information flow and showed how it can be applied for robot behaviour design.

10/2009 – 09/2011
University of Sussex (Brighton, UK)

MSc Evolutionary and adaptive systems (Distinction)
Courses covered artificial intelligence, genetic algorithms, neural networks and dynamical systems. My thesis was titled "Ultrastable Neuroendocrine Robot Controller" and proposed a novel learning algorithm for a neural network robot controller, that led to a journal publication.

09/2006 – 06/2009
University of Bedfordshire (Luton, UK)

BSc Computer Games Development (First class)
Courses included games design and development with Java, C++, OpenGL and DirectX. For my dissertation, I developed a C++ strategy game that used fuzzy logic for game unit AI.

INTERESTS

Creative writing, drawing, computer games, playing guitar