**Marcus Clements**                                                                U.K. Citizen
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## Profile

Software architect, technical manager, and engineer with 18 years experience of leading teams developing major international projects, changing career focus to specialise in Artificial Intelligence research, having recently completed a BSc Computer Science & Artificial Intelligence (1st class). Effective and confident communicator, adept at managing private sector and publicly funded development at European level, responsible for delivering complex and large-scale projects, on time and within budget, in high-pressure environments. Expert, hands-on developer, leading development teams to success by example, utilising agile process, continuous testing, peer reviews and knowledge sharing to maximise quality and efficiency.

## Artificial Intelligence Research Project at Hertfordshire University in 2016

BSc CS & AI final year project investigated the use of an information-theoretic measure of an agent's ability to influence its environment called *empowerment,* as an intrinsic motivation for players in a Java simulation of the game of Ultimate Frisbee. The project results were good, the use of *empowerment* as a utility function, without any goal-directed planning, led to recognisable team sport behaviours including passing, finding space and interceptions, detailed in a paper co-authored with the supervisor Daniel Polani. The 91% grade for the project contributed to achieving first class honours and the Board of Examiners prize for the highest overall grade for the year group.

## Skills and Experience

**Artificial Intelligence Research** – AI Planning (Search, Bayesian inference, Information theory), Machine Learning, Cognitive Modelling (CHREST), Data Mining (KDD), literature reviews, scientific writing, WEKA.
**European Educational Project Management –** E.C. accounting, valorisation, multi-lingual project management
**Programming Languages** – Java, Python, C, C++, PHP, Javascript, Groovy, shell scripting.
**Software Team Management -** Agile**,** BDD, TDD, Kanban, SCRUM, Jira, Confluence, Pivotal
**Web app development** - Laravel, Symfony, Drupal 5/6/7, Wordpress, PHP, Javascript, OOP.
**Web app scaling** - Varnish, Nginx, Memcached, Redis, DBA, CDN, AWS.
**QA & testing** - Behat, Mink, Selenium, PHPUnit, Jenkins, Cucumber, Capybara, Ruby, Mocks.
**Dev Ops** - Amazon AWS, Acquia Cloud, LAMP performance, server security, Cpanel, BASH
**Broadcast Engineering -** VOD workflow, Broadcast metadata, DRM, RFP authoring, systems vendor analysis.
Fluent **Spanish** and basic French

## Projects as director of Brightonart Ltd

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| September 2015 – present | **Virtual Post Media Asset Management System**. Drupal 7 web application controlling Vidispine media asset manager for broadcast post-production company. Interfaces with billing and metadata systems. Provides search, metadata edit, video proxy playback. |
| May 2015 – September 2015 | **Healthcare application for Community Outpatients Ltd.** Drupal 7 application for online triage of diagnostic images by medical consultants, tested with Behat, deployed to NHS secure N3 network. |
| May 2014 – May 2015 | **Consultant lead developer at Amido.** Team lead implementing a subscriptions system in Laravel 4 and Symfony with Chargify as payment gateway for a leading automotive data supplier. Extensive test automation with PHPUnit, Behat and Jenkins. |
| Nov 2013 – May 2014 | **Technical Architect and Lead Developer at NBC Universal International.** Planned system architecture for NBCU's new TV Everywhere Video on Demand service for three channels for all countries in South America. Produced detailed technical recommendation for the TVE service. Co-authored RFP document for vendors to tender for elements of the system. Improved site performance by 50% through optimising Drupal MySQL queries, fixing bugs in PHP code, optimising Varnish cache utilisation. |
| Jul 2011 - Oct 2013 | **Software Architect and Lead Developer at ITV**. As back-end technical lead, planned, designed and implemented the ITV Player (http://www.itv.com/itvplayer), a data-driven web application for desktop viewing of TV content. Implemented team methodology |

using BDD, Scrum and Kanban, Github and Jira with pairing and peer review.

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| Sep 2009 – Jun 2011 | **Software Architect and Lead Developer at Red Bee Media**. VOD Content manager and scheduling system for Everything Everywhere/Orange. Broadcast workflow management tool for internal and external clients. |
| Jun 2008 – Sep 2009 | **Consultant developer** for international clients including Artesanos Digitales in Madrid |
| Jan 2009 - Dec 2011 | **Project manager & lead developer** Netsounds a European Commission funded community website. Handled valorisation and project accounts documentation. |
| Oct 2007 - Aug 2009 | **Project Manager & lead developer** for NETMUSIC1.0 an EC funded music educational website, in Drupal 5 with custom modules in Italian, English, French and Spanish. |
| Sep 2007 - May 2008 | **Project manager & lead developer** Rocket Festival bi-lingual website. |
| Jun 2006 - Mar 2007 | **Web Developer** - PHP/MySQL/XHTML custom CMS for various clients. |
| Oct 2005 - Sep 2007 | **Manager & Lead Developer** for Netmusic (follow-up project to E-Musicnet), a European Commission funded trans-national educational project. |
| Aug 2004 - Dec 2004 | **Lead Developer** - video library and educational website for Channel 4 called Pixnmix. |
| Apr 2002 - Apr 2004 | **Special Projects Manager** - online European vocational training project E-Musicnet. |
| 2000 - 2009 | **Member of audio-visual performance group** the Vjamm Allstars composing and performing live a/v compositions at music events using Ableton Live and VJamm. |
| 2003 - 2006 | **Course Facilitator** - Interactive Installation Design at the FHJ Uni in Graz, Austria. |
| Nov 2002 - 2008 | **Architect and Manager** of major open source software project Freeframe, the definitive cross-platform real-time video effects plugin API http://www.freeframe.org |
| Sep 2002 - May 2002 | **Facilitator and course leader** for Plug Into Music - audio-visual youth education project. |
| Oct 2002 | **Software Engineer** - Design and implementation of VST audio plugin Coldcutter in C++. |
| Jan 2002 - Oct 2003 | **A/V Engineer** - Gridio 1.0 an interactive audio-visual art installation in various countries. |
| Jun 2001 - Jan 2002 | **Contract web developer** for User Advocacy Group (UAG), London UK. |

## Other Work Experience

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| Jan 2000 - Jun 2001 | **Senior Developer** at Victoria Real leading dev teams for web and interactive TV. |
| Jan 1999 - Dec 1999 | **Senior Programmer** at Computer Experts. C/C++, XML Windows and Linux. |
| Jan 1994 - Dec 1997 | **Loudspeaker design engineer** B&W Loudspeakers. |
| 1990 - 1994 | **Technical Sales Consultant** at Campkins Cameras, Cambridge. |

## Education

2016 BSc Computer Science (Artificial Intelligence) 1$^{st}$ Class – Hertfordshire University
1998 HNC Software Engineering (Distinction) – Brighton College of Technology
1989 A-levels in Maths (A), Physics (A), Biology (B) – Hills Road Sixth Form, Cambridge
1987 12 O-levels – The Perse school, Cambridge

## Other Interests

Live music, playing guitar, trekking, snowboarding, ultimate frisbee, cognitive science, psychology and philosophy, sci-fi books and films, cooking.