AIMS

EPSRC Centre for Doctoral Training in Autonomous Intelligent Machines & Systems

Annual Review 2015/16

EPSRC
Pioneering research and skills

UNIVERSITY OF OXFORD

EPSRC Centre for Doctoral Training in Autonomous Intelligent Machines & Systems

Foreword

Welcome to the second annual review highlighting key aspects and activities of staff and students in AIMS during 2015/2016. This has been the second full year of the EPSRC Centre for Doctoral Training in Autonomous Intelligent Machines & Systems. Following intakes in 2014, 2015 and now 2016, the Centre now has 31 full time Ph.D. students engaged in the four year Ph.D. programme. It's been another busy year, but again an enormously rewarding one. The CDT is thriving with applications escalating at a pace, along with more Industry partners joining the CDT.

In 2016 we received 100+ applications for the CDT programme. We have recruited 10 students, 7 of whom are fully or half funded by EPSRC, and 3 who are either fully or partially funded through Industry or University scholarships.

This year has seen our first cohort transfer from PRS (Probationary Research Student) to DPhil Status and move in to their third year, with several of them producing some outstanding papers submitted to conferences and journals.

The second year students have completed their training year and are progressing into their chosen research areas.

All students have acted as ambassadors for the CDT at events joint with other CDTs and outreach events and have set a bar of excellence. It is truly an exciting time to be involved in autonomous and intelligent systems in the UK and we are delighted by the enthusiastic engagement of our students.

We would like to say a huge thanks to EPSRC and our industry partners for their continued support of studentships and internships.

Stephen Roberts
Director

Niki Trigoni
co-Director

Why AIMS?

In the next decade our economy and society will be revolutionised by ubiquitous *Autonomous, Intelligent Machines and Systems*, which can learn, adapt, take decisions and act independently of human control. They will work for us and beside us, assist us and interact and communicate with us. The UK is fast becoming a world-leader in these technologies for sectors as diverse as manufacturing, energy, security, healthcare, assisted living, transport, environment, entertainment and education. AIMS looks to address the present need for smarter, more useful, machines and systems capable of handling intertwined heterogeneous data. We meet this requirement by training student cohorts in the underpinning sciences of robotics, embedded systems, machine learning, wireless networks, control, computer vision, parallel & distributed computing, statistics & data analysis, design and verification. Our students are able to program, embed and design software, to implement established and novel algorithms efficiently and correctly, to develop and apply models and decompositions which allow for them to control, access, leverage, learn from, interpret and distil large volumes of data.

Our research themes

The CDT is underpinned by key skills areas in four interconnected themes, in which Oxford has particular research strengths, led by members of the CDT team and strengthened by industrial contacts.

Robotics, Vision and Perception: The first key skills area is in enabling autonomous systems to identify and interpret complex scenes, from moving vehicles to human activity and form robust situation assessments to enable appropriate action and decision making. For example, robotic systems require such capabilities so that they can navigate in unknown environments; augmented reality systems require methods for scene perception and object identification. Our vision is to train a new generation of researchers that will be able to understand and embed such intelligent machines across sectors, from home health care to driver-less cars. Such applications are particularly challenging because they require autonomous systems to operate in environments that are inherently unpredictable, continually changing, and impossible to directly model. We infuse expertise in Robotics, Vision and Perception in a unique educational curriculum that cuts across theoretical developments in vision and robotics, scene understanding and perception and state-of-the-art systems research in mobile robot autonomy, navigation and mapping.

Machine Intelligence & Multi-Agent Systems: The second key skills area is in making machine autonomy and intelligence ubiquitous; allowing machines to discreetly pervade the world around us and assist us. Our students are equipped to answer questions like "how can we make machines part of our daily lives without having to continually give them instructions, maintain, repair and look after them?" and "how can machines increasingly learn our objectives, sense our frustration, and help us achieve our goals with minimum interference?" With strong multi-disciplinary expertise in the areas of artificial intelligence, machine learning, crowd-sourcing, participatory systems, language understanding, scalable inference, decentralised information systems, agent-based computing and game theory, the CDT promotes a training foundation for students to inject machine intelligence into real-world applications, such as the critical domains of healthcare, smart grids and energy resources, big data analytics, disaster response, citizen science, human-in-the-loop systems and the environment.

Control & Verification: Our third skills areas lies in developing effective techniques to monitor and control intelligent machines, such as those used in manufacturing, transportation and biosensing/healthcare systems, and to ensure their safety and dependability. For example, how do we ensure that the embedded software controller of the self-driving car does not crash, or that the implantable blood glucose monitor correctly identifies an abnormal range and raises an alarm? Verification via model checking provides automated methods to establish that given requirements are satisfied, but is challenged by the need to consider the complex interplay of discrete, continuous and probabilistic dynamics. This problem is exacerbated in the context of multi-agent systems interacting in uncertain environments. Although there are many new results in the emerging area of hybrid and probabilistic systems, there is a clear gap in developing computational tools that make use of solid theoretical foundations to solve practical problems. Our CDT combines robust control methods with approximate computation methods in stochastic hybrid systems and symbolic model checking & synthesis of embedded software.

Machine-to-Machine (M2M), Secure Sensing & Actuation: The fourth skills area underpins the vision of connecting intelligent devices seamlessly, allowing them to share their sensing, monitoring and actuating capabilities. This is often referred to as "M2M" or the "Internet of Things". Although this vision is not new, there are key technical barriers in the widespread adoption of "intelligent networked" devices. First, machine interaction typically relies on context-awareness (e.g. location) which is problematic in indoor environments. Second, sensors and actuators are inherently unreliable, often lacking calibration, quality estimation, energy management and fault detection capabilities. This compromises their practical use. Third, most M2M solutions have been designed to meet functional requirements, ignoring security and privacy concerns, both

in peer-to-peer ad-hoc networks and cellular networks. By combining expertise in communication and positioning protocols, fault-detection and quality estimation and privacy and security for wireless networks and cloud platforms, the CDT offers a training in M2M systems and the problems they currently face.

To deliver training in these core research themes, we deliver a series of modules in the following areas:

- Data Estimation & Inference
- Machine Learning
- Signal Processing
- Optimization
- Embedded Systems Programming
- Introduction to Modern Control
- Learning from Big Data
- Computer Vision
- Systems Verification
- Security in Wireless and Mobile Networks
- Autonomous Agents & Multi Systems
- Sensor & Actuator Networks
- Computational Linguistics
- Mobile Robotics

Events, highlights & outreach

- In January 2016 we held a Taster Day with the CDT in Cyber Security for prospective students. This was a very successful event with over 100 students attending. Current students spoke about their research, and also produced some great demonstrations with the use of our turtle bots and parrot drones.

- Students attended a number of workshops which were run by external companies. These were courses on MATLAB and Simulink run by Mathworks, BP again offered a course on Project Management training. The students also attended a one day workshop at YouGov's London office and spent a day at Schlumberger, Cambridge.

- In April some of the CDT students attended the "Novel communication and navigation in distributed multi-agent uncertain environments" Sandpit event at Easthampstead Park, Bracknell, with Imperial and Edinburgh CDT's. The event was joined by three Industry representatives (Ocado, Schlumberger and ARM) who set the students challenges during their stay.

- The CDT students took part in the Annual Oxford Science Festival at the Town Hall in June. They produced two demonstrations – "Can you beat the robot?" and "How can computers see?" The event attracted a huge amount of people over both days.

- During July one of the CDT students gave a talk on Robotics at Queen's College London, and the CDT also took part in the Shell ECO Marathon at the Olympic Park.

- Several CDT students attended a cross-CDT student conference in Edinburgh on Statistics and Machine Learning.

- During the summer two students took up internships, one at IBM Africa and the other with Man-AHL.

- We welcome Samsung and ABB this year as new CDT partners, and look forward to working with them in the coming years.

- The CDT will also be taking part in another Taster Day event with the CDT in Cyber Security in November 2016, and also a joint event with the Mobile Robotics Group on Mobile Autonomy: Enabling a pervasive technology of the future. This will be open to other CDTs.


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Publications & paper submission

- Gupta, Ankush and Vedaldi, Andrea and Zisserman, Andrew Synthetic "ata for Text Localisation in Natural Images" The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) June 2016.

- S. Ghoshal and S. Roberts, "Extracting Predictive Information from Heterogeneous Data Streams using Gaussian Processes", Algorithmic Finance, vol. 5, no. 1-2, pp. 21-30, 2016.

- Yee Whye The, Leonard Hasenclever, Thibaut Lienart, Sebastian Vollmer, Stefan Webb et al. "Distributed Bayesian Learning with Stochastic Natural-gradient Expectation Propagation and the Posterior Server". (http://arxiv.org/abs/1512.09327)

- Sam Albanie and Andrea Vedaldi "Learning Grimaces by Watching TV", British Machine Vision Confernece (MBVC), 2016.

- James Thewlis, Shuai Zheng, Philip H.S. Torr and Andrea Vedaldi. "Fully-Trainable Deep Matching", British Machine Vision Conference (MBVC), 2016.

- O. Bartlett, C. Gurau, L. Marchegiani and I. Posner, "Enabling Intelligent Energy Management for Robots using Publicly Available Maps" in IEEE/RSJ International conference on Intelligent Robots and Systems (IROS), Daejeon, South Korea, 2016.

Mini-projects

All students completed two mini-projects during their first year. A list of title can be found below, and all of these mini-projects can be found at the following url:

http://aims.robots.ox.ac.uk/mini-projects/

- Efficiently Learning Piecewise Linear CNNs
- Vision & Autonomous Navigation and Path Planning on Biometric Robots
- Acoustic Signal Processing to battle malaria bearing mosquitoes
- Identifying Bayes nets expressed as general probabilistic programs
- Fine-grained image classification of flowers
- Compositions of queries in probabilistic programming languages
- SLAM with Feature-Based and Iterative Methods
- Acoustic Signal Processing to battle malaria bearing mosquitoes
- Planning in partially observable MDP's
- Distributionally robust optimization techniques in batch bayesian optimisation
- Successful Machine Learning Strategies in an Environment of Intermittent Data Availability
- Imputation in Large Heterogenerous Human-Centric Data
- Collision Free Planning & Path Following for a Mobile Platform
- Optimizing Informatic gain of Embedded Sensor Systems
- Vision as Inverse Graphics via Probabilistic Programming
- Model-Based Reinforcement Learning
- Preferences Learning
- Scene Flow for Dynamic Obstacle Detection
- Innovative Sensing and Actuation for Smart Buildings
- Optimization under high pressure
- Remote Control Real-World applications of Bayesian Control
- Innovative Sensing & Actuation for Smart Buildings

DPhil Proposals

Cohort 2015 will now work on their PhDs. A list of their research proposals can be found at: **http://aims.robots.ox.ac.uk/dphil-research-proposals/**


Make the Future London
A FESTIVAL OF IDEAS & INNOVATION
Maximum height 2.3m
Maximum height 2.3m
TECHNICAL TEAM
EPSRC
#SEM2016
Shell Eco-marathon
#SEM2016

Feedback from Students – Cohort 2015

"The AIMS CDT courses have given me the right tools and solid background for a smooth transition into the DPhil. The year has also provided the opportunity to work with great people and I have benefitted from being able to discuss a multitude of ideas with many fellow students in the growing AIMS community."

"The structure of the CDT's first year allows students to explore different topics and interact with multiple research groups, professors and other students. This has been very valuable to me, especially since I wasn't studying in Oxford before starting my DPhil. The cohort system, bringing together student with various backgrounds, helped everyone cover unfamiliar subjects efficiently, in a friendly and collaborative environment, making a perfect start on their research."

"The first year has been enriching in a broad range of subjects all key to the understanding and design of Autonomous Intelligent Machines and Systems. The courses have offered a sensible mix of theory and practice, with practicals complementing the lectures. By presenting not only mature frameworks, but also current research and future challenges, the taught modules have prepared us to begin our DPhil with a solid and wide background."

"The first year of the CDT provides a great introduction to multiple research areas and gives you the opportunity to experience working in a different field each week. This allows students to learn about research challenges in new areas and also to hone existing interests, which is very helpful when it comes to choosing what research to pursue for the following three years."

"The AIMS CDT has given me the opportunity to experience working with a broad range of excellent research groups. This is particularly helpful for committing to a research area and establishing invaluable connections for an interdisciplinary DPhil."

"I personally found the first year to be a whirlwind of knowledge and topics as we were exposed to many different research areas in rapid succession. While most modules only scratched the surface of the topics they covered, it was enough to expose us to the relevant research problems in that area and give us a foundation of knowledge we can call upon in the future. The two mini-projects likewise allowed us to work on real problems while getting a taste of both the group and the research itself. It has certainly given me a level of confidence that I am in the right place doing research that interests me, as well as that I have the skills, knowledge, and network of support to do it."

"AIMS truly illuminates all the roots that form the knowledge tree for intelligently behaving systems. In a field so broad it is difficult to find a complete digest, but AIMS has succeeded and surpassed this challenge to deliver the necessary foundation for any and all developments in smart machines. The teaching quality is brilliant, and the practicals incredibly engaging; we are now ready to push the limits!"

"The CDT completely fulfilled my expectations. It gave me an excellent first overview over the field which was very useful in making an informed decision about the area of interest for my DPhil. Additionally, being part of a cohort is useful as it encourages the exchange of thoughts and ideas between students of different specializations. I think especially Machine Learning which is many separate but closely related research areas profits strongly from this structure."

"Coming in with only my enthusiasm and a mostly unrelated degree (Physics), I've been exposed to an enormous wealth of knowledge and quickly brought up to speed by the taught courses, while the mini-projects have proven a great way to find a field and supervisor that leave me hugely optimistic about the rest of the PhD. With continued dedication to improving itself, the AIMS CDT at Oxford will become a model for excellent graduate education."

"The past year was very enjoyable. Being in Oxford's unique environment, and working among an amazing group of people, AIMS succeeded in fully preparing me to start my DPhil. Not only do I feel much more determined and excited about the future of my research, but I am also well equipped to do multidisciplinary, collaborative research."


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Feedback from Courses – Cohort 2015

"The course was valuable in giving a broad overview over different topics, which was especially interesting as the lecturer had a very broad knowledge of the subject."

"The lecturer was passionate and engaging, with a great depth of knowledge among various areas."

"Labs were very efficient, allowing us to focus on the essential parts. Detection and matching courses very interesting, with both theoretical and practical insights."

"The practicals were relevant, well-designed, and engaging."

"I particularly enjoyed the parts of the course motivated by real-world examples of verification methods."

"Very satisfied with the course, certainly one of the best courses. TA s very helpful, and the course required team work – a very important skill to develop."

"Interesting material and most of the labs were really fun and useful."

"The topics explained in class were explained very well and it was easy to follow."

"The topic, though intrinsically difficult, was kept accessible by good lecturing. The exercises were kept interesting by bringing in examples from game shows, which sparked entertaining discussion. The TA was very helpful and encouraging, allowing student to work at their own pace."

"The idea of everybody presenting a paper at the end of the week worked great."

"Very interesting and engaging content."

"As usual, the vision group practicals are well-designed and helpful."

"The lecturers were extremely knowledgeable and their presentations very well prepared."

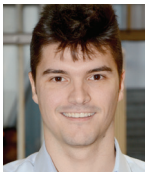
"Great introduction to practical optimization methods for computer vision."

"Well explained, easy to understand."

"The exercises struck a good balance of being challenging while remaining reasonably accomplished. The case study was also an interesting common vein throughout the week."

"Fantastic course – excellent balance of high-level ideas and low-level implementation details."

Student Biographies – Cohort 2016



Triantafyllos Afouras

I was born and raised in Thessaloniki, Greece, where I obtained a diploma in Electrical and Computer Engineering from the Aristotle University. During my studies there, I participated in the Pandora robotics team as a software architect. I have also worked and studied in Zürich and Madrid. I am interested in machine learning, particularly the use of deep and reinforcement learning for the development of autonomous agents. I am enthusiastic about traveling and enjoy swimming, football and cinema.

Oliver Bent

Graduated MEng Engineering Science from the University of Oxford 2013. The last 3 years I have been working with IBM Research Africa in Nairobi, Kenya. Developing applied technology solutions in the domains of Education and Healthcare.

I look forward to furthering my academic interest in machine intelligence, towards tackling new challenges with technology.

Fabian Fuchs

I am from Erlangen, Germany (close to Nuremberg and two hours north of Munich). I studied physics at the Universities of Erlangen, Heidelberg, and Imperial College London. Alongside my studies, I gained experience in consulting, co-founded a startup and did some awesome sports climbing. In physics, I have enjoyed computational work the most, specifically developing and implementing complex algorithms. In my twelve-month M.Sc. project (in Germany the M.Sc. lasts for two years), I simulated virus self-assembly in hydrodynamic flow. Fascinated by recent developments in artificial intelligence and by the possibilities which have opened up, I am thrilled to join the AIMS CDT in October 2016.

Adam Golinski

Graduated in Computational Physics from The University of Edinburgh. Meanwhile studying I spent a year abroad at University of California, Berkeley where my interest in machine learning started.

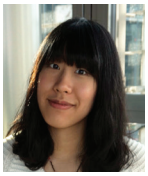
I am interested in high-tech and software industries, automation (especially using cutting-edge machine learning solutions), IoT, sensor networks, big data trends and data science. Apart from that I'm a fan of plain text emails, amateur gym-goer and an avid FIFA player.

Bradley Gram-Hansen

I gained my MMath from the University of Nottingham in 2015 and had the pleasure of completing a summer research internship during my time there, within the relativistic quantum information group. I am thrilled to be joining the AIMS program and I cannot wait to explore all that it offers. My personal interests are in developing new learning processes that use information in interesting ways, whether that be in the classical sense or the non-classical sense. Although, with all that the AIMS program offers I am bound to develop many other personal interests. Outside of academia I enjoy fell running, rock climbing, all types of cycling, the Discworld series, Arduino sets and observing the interplay of electronic, natural and human systems.

Xu Ji

I'm from London. I studied Computing as an undergrad at Imperial, where I co-wrote a bare metal chess game in pure assembly, interned at Google a few times, built some machine learning into their products, and for my final year project invented a new image matching algorithm. I look forward to exploring these interconnected areas and more in the CDT. My hobbies include listening to a lot of music, animals, and taking random walks.



Shuyu Lin

I am from Beijing, China and have been studying in the UK for the last 6 years. I have gained huge interest from my undergrad and master degree of Engineering at Oxford in the areas of machine learning, networks, signal processing and robotics, and wish to gain further knowledge of them during my postgraduate study. I like technology, travel and food, and love to meet people sharing the same interests!

Andrea Patane

I am from Catania, Italy. I have received the BSc degree in Mathematics from the University of Catania, with a thesis on evolutionary algorithms for solar cell design. Pareto-oriented analysis for synthetic biology design problems was the main theme discussed in my Master thesis. I also had the chance to work on pacemaker modeling and analysis during two summer internships in the VERIWARE project. I enjoy swimming, playing the blues harp and I really like opera.

Sasha Salter

I graduated in summer 2015 with a MEng in Engineering Science at Keble College, Oxford. During my final year I investigated the use of Gaussian Processes for sequential changepoint detection in financial time series. In the past year I worked for an energy consultancy as an analyst and a location management company as a publisher specialist. I am excited to return to Oxford and pursue my passion for artificial intelligence and machine learning. My hobbies include piano, guitar, sketching, gym, running and cooking.

Edward Wagstaff

I grew up in Milton Keynes and did my undergrad in maths at Cambridge, followed by a maths and computer science masters at Oxford. I've been working in the software industry in London since 2012, but I've decided that researching autonomous systems sounds more fun than building websites so I'm very excited to be starting on AIMS.

Student Biographies – Cohort 2015

Leonard Berrada

I was born and raised in Paris, France, where I have benefitted from a multidisciplinary education: after two years of theoretical mathematics and physics at Lycée Sainte Genevieve, I have studied a broad range of engineering subjects at Ecole Centrale Paris, with an emphasis on computer science and applied mathematics. While there, I also completed a Bachelor of Science degree in Fundamental Physics at University Paris-Sud. I went last year to University of California, Berkeley, for a Master of Engineering in Industrial Engineering and Operations Research. After an internship at Thales Research & Technology, I am now thrilled to join the Autonomous Intelligent Machines and Systems program to further my passion for artificial intelligence and machine learning.

Rowan Border

I'm from the island of Bermuda but have spent the past four years in Scotland where I attended the University of Edinburgh and studied for a BSc in Artificial Intelligence and Computer Science. In my final year at Edinburgh I was able to pursue my interest in robotics for the first time by working on my robot drawing dissertation project, the 'Robot Picasso', with the SLMC robotics group. I have been elected as the Rhodes Scholar from Bermuda for 2015 and will be attending Lincoln College. I am very excited to be starting the CDT in Autonomous Intelligent Machines and Systems and continuing to explore the world of robotics.

Adam Cobb

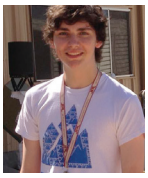
I completed my undergraduate degree in Engineering Science at Lady Margaret Hall, Oxford. Having particularly enjoyed working on the detection of exoplanets in large data sets for my final year project, I am excited to explore other areas in the field of AIMS. My hobbies include football, running, swimming and golf.

Rob Cornish

I am originally from Australia, and grew up mostly in Melbourne. I began university as a philosophy major at the University of Melbourne before transferring to study pure mathematics and electrical engineering, and then completed an Honours year in applied mathematics at Monash University with a thesis topic in computer vision. Along the way, I also gained some research experience in program analysis at the University of Melbourne, and in robotics with the CSIRO. I am particularly interested in artificial intelligence topics within a robotics context. I also enjoy cycling, hiking, and playing contemporary and classical guitar.

Maximilian Igl

I am from Germany where I have been studying Physics (MSc) and Economics (BSc) in Munich. Over the last two years I also have been quite active at the Centre for Digital Technology and Management, a University program here in Munich dedicated to entrepreneurship. There, and also during my studies of Physics, I've developed a strong interest in Machine Learning and its applications. In my free time I like to go climbing or hiking. The last time I was in England (I was at the University of Warwick for one year) I also did quite a lot of Tango Argentino.



Gregory Farquhar

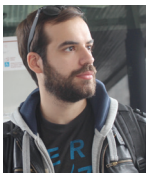
I'm German-American but have lived in the UK for over ten years now. I studied at Oxford for a Masters in Physics, but am looking forward to shifting my academic focus for the CDT in AIMS. I'm particularly interested in how humans interact with autonomous systems, and in natural language processing. In my spare time I love to play guitar!

Kevin Judd

My name is Kevin Judd, and I live between Baltimore and Washington D.C. in the U.S. with my parents, younger sister, and my dog and cat I graduated from the University of Maryland College Park with degrees in both Electrical Engineering and Computer Science. Outside of class and work, I enjoy the outdoors and being active. I love running and playing sports, as well as cooking and music. I'm always excited by the opportunity to travel to new places and meet new people.

Ivan Kiskin

Originally from Ukraine, I have attended schools in London, Kiev and Germany. I then went on to study Engineering Science at Wadham College, Oxford. In my fourth year project I worked on signal processing and probabilistic machine learning techniques to aid the detection of pulsars. Outside of studies I take an interest in music and guitar. I am looking forward to further expanding and applying my knowledge at AIMS.



Kyriakos Polymenakos

From Athens, Greece, studied Electrical and Computer Engineering in the NTU of Athens. Took special interest in Power Systems, but soon was more attracted to Control Systems and Machine Intelligence. As part of the CDT in AIMS looks to take part in the research creating a new generation of intelligent systems, propelled by learning from big data and cooperation between multiple agents.

Nikitas Rontsis

I am from Greece, where I studied Electrical & Computer Engineering (5-year Diploma) at Aristotle University of Thessaloniki. During this period, I was an exchange student in EPFL for 2 semesters, where I also made my diploma thesis in controlling kites for energy harvesting. I am excited about modern control methodologies, including, but not limited to, data driven techniques.

Timothy Seabrook

I graduated in MEng Intelligent & Robotic Systems at Lancaster University in 2014 and co-founded a Sharing Economy limited partnership in the same year. I am interested in exploring and developing collaborative AI agents reflecting the social roles of humans, as well as pushing the bleeding edge of autonomous complex systems modelling and prediction.

I am a keen entrepreneur, and hope to discover new applications for Artificial Intelligence to benefit humankind.

Jaleh Zand

I completed my MSc in mathematics at Imperial College London in 2014. Previous to that I was a structured trader, followed by a quant strategist in Fixed Income division at UBS investment bank, where I started to be fascinated and intrigued with machine learning methods. I further have a keen interest in Bayesian statistics, neural networks, and complex systems.

Student Biographies – Cohort 2014

Samuel Albanie

I did my undergrad in mathematics at Oxford, before doing a Masters in computer science Trinity College, Dublin. I'm interested in AI, particularly computer vision and learning.

Oliver Bartlett

After growing up in New Zealand, Syria and London, my family moved near Banbury in 2004. I did my undergraduate Engineering Science at New College, culminating in my 4th Year Project where I investigated trends in the Afghanistan War using Log-Gaussian Cox Processes. Outside of Engineering I enjoy Windsurfing, Aussie Rules Football, Hockey and Skiing. I look forward to continuing my studies at Worcester College.

Siddartha Ghoshal

I'm British-Indian and grew up in Fontainebleau, a lovely small town on the outskirts of Paris. Halfway through my schooling I moved to the UK, and have spent most of the past 2 decades based in London. Following an undergraduate degree in Mathematics at Imperial College, I began work in debt capital markets at Dresdner Kleinwort Wasserstein in 2002. I subsequently took a year out from investment banking to complete an MSc in Finance and Economics at the LSE to expand my personal knowledge. This opened new and vastly more exciting doors in my sector, so I plunged back in as a trader in commodity exotic derivatives at Deutsche Bank, where I spent much of my twenties. I completed the MSc in Computer Science at Oxford in September 2012 and have ever since been keenly interested in the application of machine learning techniques to pattern recognition in complex datasets.

Ankush Gupta

I am from India but was in the US for my undergraduate work in Electrical Engineering and Computer Science at the University of California, Berkeley. I am interested in computer vision, robotics and machine learning methods. Recently, I have worked on learning robotic manipulation from human demonstrations, specifically, learning surgical suturing. I have also worked on 6DOF tracking system for large-scale demonstration collection. My time at Oxford is being funded by the generous Clarendon Fund and Balliol College Eddie Dinshaw Scholarship.

Jack Hunt

I originate from Kent in southeastern England and conducted my BSc in Computer Science at Goldsmiths College, University of London. During my study for my Batchelor's degree I developed an interest in Machine Learning and Adaptive Systems. This interest has lead to my participation in the CDT in Autonomous Intelligent Machines and Systems. In particular, I am interested in applications of Machine Learning, Computer Vision and Agent Systems to Robotics.

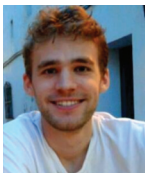
Stefan Saftescu

I am from Romania and moved to the UK to start university. I obtained my Bachelor's Degree in Computer Science from the University of Surrey in 2012 and my Master from University of Oxford in 2013. Having spent a year as Software Engineer in a London-based "big data" start-up, I am now eager to move into Engineering Science throw the CDT in Autonomous Intelligent Machines and Systems.

[1] See the VGGMaxBBNet entries at: http://rrc.cvc.uab.es/?ch=2&com=evaluation

Hillary Shakespeare

I'm from London where I studied Physics (MSci) at Imperial College. I then took a year out to make a micro-budget movie (a long standing hobby) before coming to Oxford for an MSc in Computer Science. Within the MSc I was most interested in Intelligent Systems and Machine Learning and am excited to expand on these and related areas in the CDT.



James Thewlis

I was born in Wales but grew up near Alicante in Spain. I studied MEng Computing at Imperial College London. After graduating I spent some time travelling across North America before starting work at Mirriad, collaborating with Oxford on a TSB funded project using deep learning for video analysis. I am interested in Computer Vision and Machine Learning, especially object recognition and scene understanding.

Stefan Webb

Graduated from the Australian National University in 2013 with a Bachelor of Statistics and Economics with First Class Honours in Statistics, topping his cohort. He received the first and second year economic prizes for the highest overall marks, and was also a recipient, during his studies, of the Statistical Society of Australia's Young Statisticians Award. His research interests lie in the fields of machine learning and Bayesian statistics, and at Oxford he intends to work on developing the next generation of intelligent systems that can understand natural language. Alongside his academic work, Stefan has worked as an ANU teaching assistant in maths, economics, and computer science, as well as supporting outreach and school support work coordinated by the university. Outside of study, his interests include drumming, classical music, and photography. On completion of the DPhil he hopes to either continue work in the field of academia or establish himself as a big data entrepreneur.

AIMS Contacts

The AIMS administration team comprises the Director, the co-Director and the Centre Administrator.

Stephen Roberts
Director

Niki Trigoni
co-Director

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A full list of academic supervisors can be found at:
http://aims.robots.ox.ac.uk/academics-and-staff/


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