

Stefano Vittorino Albrecht

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Research Statement

I am a computer scientist with specialisation in artificial intelligence. My research interests are in the areas of autonomous agents, multi-agent systems, machine learning, and game theory, with a focus on sequential decision making under uncertainty. The long-term goal of my research is to create intelligent autonomous agents that can interact effectively with other agents to accomplish tasks in complex dynamic environments.

Appointment

Jan 2016 – current **Postdoctoral Fellow** with Humboldt Fellowship
Department of Computer Science
The University of Texas at Austin
Host: Prof. Peter Stone

Education

Sep 2011 – Aug 2015 **Ph.D. Artificial Intelligence**
School of Informatics
The University of Edinburgh
Supervisor: Dr. Subramanian Ramamoorthy
Thesis: *Utilising Policy Types for Effective Ad Hoc Coordination in Multiagent Systems*
Viva voce: Category A (no corrections required)

Jan 2014 – May 2014 **Visiting Scholar**
Department of Electrical Engineering and Computer Science
Masdar Institute of Science and Technology, Abu Dhabi
Host: Dr. Jacob W. Crandall

Sep 2010 – Aug 2011 **M.Sc. Artificial Intelligence**
School of Informatics
The University of Edinburgh
Supervisor: Dr. Subramanian Ramamoorthy
Grade: A, with distinction

Oct 2007 – Mar 2010 **B.Sc. Computer Science**
Fachbereich Informatik
Technische Universität Darmstadt
Grade (thesis/overall): 1.0 (A) / 1.4 (A)
Completed in 2.5 years

Awards & Honours

- *Feodor Lynen Fellowship for Postdoctoral Researchers* (2 years of funding)
Alexander von Humboldt Foundation
- *Doctoral Fellowship* (3 years of funding)
German National Academic Foundation (“Studienstiftung des deutschen Volkes”)
- *Finalist in national “EPSRC UK ICT Pioneers 2014” competition*
UK Engineering and Physical Sciences Research Council
- *Selected to attend “5th Lindau Nobel Meeting on Economic Sciences”*
Council for the Lindau Nobel Laureate Meetings
- *Selected to attend “1st Heidelberg Laureate Forum”*
Heidelberg Laureate Forum Foundation

External Funding

Project title: “Ad hoc team formation under uncertainties and dynamically changing environments”

Project sponsor: Raytheon Company, USA

Principal investigator: Prof. Peter Stone, The University of Texas at Austin

Amount: 100,000 USD

Period: May 2016 – June 2017

Own involvement: We developed the proposal based on my research and I am conducting this project

Academic Service & Organisation

- Guest co-editor – *Special Issue on Multiagent Interaction without Prior Coordination*
Journal of Autonomous Agents and Multi-Agent Systems
- Programme co-chair – *3rd Workshop on Multiagent Interaction without Prior Coordination*
AAAI Conference on Artificial Intelligence, 2016
- Programme co-chair – *2nd Workshop on Multiagent Interaction without Prior Coordination*
AAAI Conference on Artificial Intelligence, 2015
- Programme co-chair – *1st Workshop on Multiagent Interaction without Prior Coordination*
AAAI Conference on Artificial Intelligence, 2014
- Reviewer for various conferences and journals
(AAAI’16, IJCAI’16, AAMAS’16, AAMAS’17, IJCAI’17, JAAMAS)

Talks (selection)

- “Learning to Distinguish Between Belief and Truth”
Machine Intelligence Research Institute
Berkeley, CA, USA, June 2016
- “Reasoning about Hypothetical Behaviours and their Parameters”
Raytheon Company
El Segundo, CA, USA, March 2016

- “Belief and Truth in Hypothesised Behaviours”
Microsoft Research
Cambridge, UK, September 2015
- “Belief and Truth in Hypothesised Behaviours”
Machine Learning Group, Cambridge University
Cambridge, UK, September 2015
- “Utilising Hypothesised Behaviours for Effective Ad Hoc Coordination in Multiagent Systems”
Machine Learning Reading Group, Heriot-Watt University
Edinburgh, UK, February 2015
- “An Empirical Study on the Practical Impact of Prior Beliefs over Policy Types”
AAAI Conference on Artificial Intelligence
Austin, TX, USA, January 2015
- “E-HBA: Using Action Policies for Expert Advice and Agent Typification”
AAAI-15 Workshop on Multiagent Interaction without Prior Coordination
Austin, TX, USA, January 2015
- “A New Hybrid Method for Autonomous Acting Using Predictive Models”
Thompson Reuters
Eagan, MN, USA, July 2014
- “Convergence and Optimality of Best-Response Learning with Policy Types”
AAMAS-14 Workshop on Adaptive Learning Agents
Paris, France, May 2014
- “Automated Agents in Financial Markets and the Problem of Ad Hoc Coordination in Heterogeneous Competitive Agent Populations”
Thompson Reuters
Eagan, MN, USA, May 2013
- “Comparative Evaluation of MAL Algorithms in a Diverse Set of Ad Hoc Team Problems”
International Conference on Autonomous Agents and Multiagent Systems
Valencia, Spain, June 2012

Peer-Reviewed Publications

Journals:

- S.V. Albrecht, J.W. Crandall, S. Ramamoorthy
Belief and Truth in Hypothesised Behaviours
Artificial Intelligence (AIJ), Vol. 235, pp. 63–94, 2016
- S.V. Albrecht, S. Ramamoorthy
Exploiting Causality for Selective Belief Filtering in Dynamic Bayesian Networks
Journal of Artificial Intelligence Research (JAIR), Vol. 55, pp. 1135–1178, 2016
- S.V. Albrecht, S. Liemhetcharat, P. Stone
Special Issue on Multiagent Interaction without Prior Coordination: Guest Editorial
Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS), 2016

Conferences & Workshops:

- S.V. Albrecht, P. Stone
Reasoning about Hypothetical Agent Behaviours and their Parameters
16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)
São Paulo, Brazil, 2017
- S.V. Albrecht, S. Ramamoorthy
Exploiting Causality for Selective Belief Filtering in Dynamic Bayesian Networks (Extended Abstract)
Invited paper in journal track, 26th International Joint Conference on Artificial Intelligence (IJCAI)
Melbourne, Australia, 2017
- S.V. Albrecht, S. Ramamoorthy
Are You Doing What I Think You Are Doing? Criticising Uncertain Agent Models
31st Conference on Uncertainty in Artificial Intelligence (UAI)
Amsterdam, Netherlands, 2015
- S.V. Albrecht, J.W. Crandall, S. Ramamoorthy
An Empirical Study on the Practical Impact of Prior Beliefs over Policy Types
29th AAAI Conference on Artificial Intelligence (AAAI)
Austin, Texas, USA, 2015
- S.V. Albrecht, J.W. Crandall, S. Ramamoorthy
E-HBA: Using Action Policies for Expert Advice and Agent Typification
AAAI-15 Workshop on Multiagent Interaction without Prior Coordination (MIPC)
Austin, Texas, USA, 2015
- S.V. Albrecht, S. Ramamoorthy
On Convergence and Optimality of Best-Response Learning with Policy Types in Multiagent Systems
30th Conference on Uncertainty in Artificial Intelligence (UAI)
Quebec City, Canada, 2014
- S.V. Albrecht, S. Ramamoorthy
Convergence and Optimality of Best-Response Learning with Policy Types
AAMAS-14 Workshop on Adaptive Learning Agents (ALA)
Paris, France, 2014
- S.V. Albrecht, S. Ramamoorthy
A Game-Theoretic Model and Best-Response Method for Ad Hoc Coordination in Multiagent Systems
12th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)
St. Paul, Minnesota, USA, 2013
- S.V. Albrecht, S. Ramamoorthy
Comparative Evaluation of MAL Algorithms in a Diverse Set of Ad Hoc Team Problems
11th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)
Valencia, Spain, 2012

Teaching Experience

- Undergraduate student advising at The University of Texas at Austin:
Advising and working with B.S. Computer Science students (since 2016)
Research seminar in Business Honors Research Interest Group (2016)
- Co-advised M.Sc. dissertations:
 - Edward Stevinson, The University of Edinburgh, 2016*
Thesis: *Utilising policy types to achieve effective ad hoc coordination in the game Othello*
(Supervisor: Prof. Alex Lascarides)
 - Jorge Salamanca, The University of Edinburgh, 2015*
Thesis: *Empirical evaluation of properties of a model for learning to interact*
(Supervisor: Dr. Subramanian Ramamoorthy)
 - Aniket Sanyal, The University of Edinburgh, 2013
Thesis: *Categorizing behaviour profiles using topological data analysis*
(Supervisor: Dr. Subramanian Ramamoorthy)

* Projects based on my research

- Guest lectures & tutorials:
 - Guest lecture “Machine Beliefs”
In: Introduction to Cognitive Science (B.Sc. course)
The University of Texas at Austin, 2017
 - Guest lecture “Learning in Repeated Interactions”
In: Decision Making in Robots and Autonomous Agents (M.Sc. course)
The University of Edinburgh, 2015
 - Half-day tutorial “Multiagent Learning: Foundations and Recent Trends”
(jointly with Prof. Peter Stone, The University of Texas at Austin)
In: International Joint Conference on Artificial Intelligence, Melbourne, Australia, 2017
 - Half-day tutorial “Type-based Methods for Interaction in Multiagent Systems”
(jointly with Dr. Prashant Doshi, University of Georgia)
In: AAAI Conference on Artificial Intelligence, Phoenix, USA, 2016
- Design, implementation, and grading of final course project on Software Engineering
In: Foundations of Computer Science I (B.Sc. course)
Technische Universität Darmstadt, 2009

Professional Membership

- Association for the Advancement of Artificial Intelligence (AAAI)
- ACM Special Interest Group on Artificial Intelligence (SIGAI)