Elena Corina Grigore

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Research Interests

Robotics, machine learning, artificial intelligence, human-robot interaction, human-robot teaming, adaptive systems, reinforcement learning, hierarchical multi-agent reinforcement learning, user modeling.

Education

- **Doctor of Philosophy, Computer Science, Yale University, USA** 2012 – present
  Advisor: Brian Scassellati
  Area of study: Discovering Policies for Adaptive Robots in Human-Robot Teaming
- **Master of Philosophy, Computer Science, Yale University, USA** 2015
- **Master of Science, Computer Science, Yale University, USA** 2015
- **Master of Engineering with Study Abroad**
  Computer Science, University of Bristol, UK 2012
  Advisors: Kerstin Eder (University of Bristol, UK)
  Anthony G. Pipe (Bristol Robotics Laboratory, UK)
  Christopher Melhuish (Bristol Robotics Laboratory, UK)
  Thesis: *"I Robot, I Think"*
  4-year program encompassing my Bachelor's degree
  Study Abroad at University of California, San Diego (2010/2011)
  Master of Engineering with First Class Honors
- **Coventry University, UK** 2009
  Completed first year of Computing Honors Degree
  Highest scoring student in my cohort
  Transfer to University of Bristol at the end of my first undergraduate year

Publications

[13] **E. C. Grigore**, A. Pereira, J. J. Yang, I. Zhou, D. Wang, and B. Scassellati, "Verbal communication improves perceptions of friendship and social presence in human-robot interaction", in *Proceedings of the 16th International Conferences on Intelligent Virtual Agents (IVA)*, To appear, Los Angeles, USA, 2016. **Best paper finalist.**

[12] **E. C. Grigore** and B. Scassellati, "Constructing policies for supportive behaviors and communicative actions in human-robot teaming", in *Proceedings of the HRI Pioneers Workshop at the 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, Christchurch, New Zealand, 2016, pp. 615–616.

[11] ——, "Discovering the granularity of primitive actions from human motion data in human-robot teaming", In submission, 2016, September.

[10] ——, "Hierarchical multi-agent reinforcement learning through communicative actions for human-robot collaboration", In submission, 2016, October.

[9] A. Suman, R. Marvin, **E. C. Grigore**, H. Admoni, and B. Scassellati, "Robots can induce mimicry in humans depending on previous behavior", in *Proceedings of the 25th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, To appear, New York, USA, 2016, August 26 - 31.

[8] **E. C. Grigore**, "Modeling motivational states through interpreting physical activity data for adaptive robot companions", in *Proceedings of the 23rd International Conference on User Modelling, Adaptation and Personalization (UMAP)*, Dublin, Ireland: Springer, 2015, pp. 379–384.

[7] **E. C. Grigore**, A. Pereira, and B. Scassellati, "Modeling motivational states in adaptive robot companions", in *2015 AAAI Fall Symposium Series*, 2015.

[6] **E. C. Grigore** and B. Scassellati, "Maintaining engagement in shared goals with a personal robot companion through motivational state modeling", in *Proceedings of the Human-Robot Teaming Workshop at the 10th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, Portland, OR, 2015.

[5] B. Hayes, **E. C. Grigore**, A. Litoiu, A. Ramachandran, and B. Scassellati, "A developmentally inspired transfer learning approach for predicting skill durations", in *Proceedings of the 4th Joint IEEE International Conferences on Development and Learning and Epigenetic Robotics (ICDL-Epirob)*, IEEE, 2014, pp. 181–186.

[4] E. Short, K. Swift-Spong, J. Greczek, A. Ramachandran, A. Litoiu, **E. C. Grigore**, D. Feil-Seifer, S. Shuster, J. J. Lee, S. Huang, *et al.*, "How to train your dragonbot: socially assistive robots for teaching children about nutrition through play", in *Proceedings of the 23rd IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, IEEE, 2014, pp. 924–929.

[3] **E. C. Grigore**, K. Eder, A. G. Pipe, C. Melhuish, and U. Leonards, "Joint action understanding improves robot-to-human object handover", in *Proceedings of the 26th IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2013, pp. 4622–4629.

[2] **E. C. Grigore** and B. Scassellati, "Feasibility of sar approaches – helping children with learning tasks", in *Proceedings of International Workshop on Developmental Social Robotics (DevSor): Reasoning about Human, Perspective, Affordances and Effort for Socially Situated Robots at the 26th IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Tokyo, Japan, 2013, pp. 22–24.

[1] **E. C. Grigore**, K. Eder, A. Lenz, S. Skachek, A. G. Pipe, and C. Melhuish, "Towards safe human-robot interaction", in *Proceedings of the 12th Annual Towards Autonomous Robotic Systems (TAROS)*, Springer, 2011, pp. 323–335.

Honors and Awards

- **Best Paper Finalist, Intelligent Virtual Agents (IVA)** 2016
  "Verbal Communication Improves Perceptions of Friendship and Social Presence in Human-Robot Interaction"
- **Human-Robot Interaction (HRI) Pioneer** 2016
  Highly selective workshop that seeks to foster creativity and collaboration across HRI
- **Tocher Fellowship, Yale University, USA** 2015
- **Tocher Fellowship, Yale University, USA** 2014
- **EPSRC (Engineering and Physical Sciences Research Council) Fellowship, UK** 2011
  Summer Research Project at the Bristol Robotics Lab, Bristol, UK
- **EPSRC Fellowship, UK** 2010
  Summer Research Project at the Bristol Robotics Lab, Bristol, UK
- **Head of Promotion Honorary Prize,**
  Piatra Neamț Computer Science High School, Romania 2008

Thesis

[Master's Thesis] **E. C. Grigore**, "I robot, i think", MASTERS THESIS University of Bristol, UK (work performed at the Bristol Robotics Lab, Bristol, UK), 2012.

Research Experience

- **Yale University, Social Robotics Laboratory, CT, USA**
  - *Reinforcement learning for human-robot teaming* 2014 – present
    Applying machine learning techniques to endow robots with learning capabilities needed when placed in new environments or faced with new tasks. Investigating techniques including hierarchical and multi-agent reinforcement learning.
  - *User modeling for motivational states within a reinforcement learning framework* 2013 – 2015
    Designed a system for long-term robot companions that employs a model of users' daily motivational states within a reinforcement learning framework.
  - *Developed a robot for interaction with children in an educational setting* 2012 – 2014
    Built, assembled, and programmed research robot platform DragonBot for interaction with children. Performed human-robot interaction study at local schools.
- **University of Bristol and the Bristol Robotics Laboratory, Bristol, UK**
  - *Master of Engineering "I Robot, I Think" Thesis Project* 2011 – 2012
    Applied machine learning techniques to model users' intentions for object handovers in human-robot interaction scenarios.
  - *"I Robot... I Learn" Summer Research Project* 2011
    Implemented a machine learning algorithm for estimating the state of object handovers in human-robot interaction scenarios.
  - *"I Robot... and Beyond" Summer Research Project* 2010
    Investigated safety and liveness properties rooted in design verification principles for a human-robot interaction system.

Academic Service and Membership

- Conference Refereeing service
  - IEEE International Symposium on Robot and Human Interactive Communication 2016
  - Elsevier Cognitive Systems Research Journal 2016
  - ACM/IEEE International Conference on Human-Robot Interaction 2015 – 2016
  - Affective Computing and Intelligent Interaction 2015
  - IEEE/RSJ International Conference on Intelligent Robots and Systems 2014
- Membership in Professional Societies
  - Association for the Advancement of Artificial Intelligence 2014 – present
  - IEEE 2014 – present
  - Cognitive Science Society 2014 – present
- Outreach
  - World Science Festival, New York City 2014

- Routine lab tours and open houses, Yale Social Robotics Lab, CT 2012 – present
- Routine outreach activities involving robot demos at local schools, CT 2012 – present

- Book Reviewing
  - *Visual Analysis of Behaviour – From Pixels to Semantics*, by Gong S, Xiang T 2012

Teaching Experience and Mentorship

- Teaching Fellow (at Yale University, USA)
  - Mathematical Tools for Computer Science (CPSC 202A) 2014 – 2015
  - Intelligent Robotics (CPSC 473) 2013 – 2015
  - Intelligent Robotics Lab (CPSC 472) 2013
- Mentored five undergraduate students and a high-school student on research projects 2013 – 2015
- Point of contact for incoming Romanian students, University of Bristol, UK 2009 – 2012
- Mathematics student-teacher at Sydney Stringer School, Coventry, UK
  Students Associates Scheme 2009
- Course Representative, Coventry University, Coventry, UK
  Speaking on behalf of the student body 2008 – 2009

Conferences and Summer Schools Attended

- AAAI Fall Symposium Series
  Presented talk for accepted paper 2015
- Max Planck Institute for Intelligent Systems Machine Learning Summer School, Germany
  (**20% acceptance rate**) 2015
- The International Conference on User Modelling, Adaptation and Personalization (UMAP)
  Presented talk for accepted paper 2015
- The ACM/IEEE International Conference on Human-Robot Interaction (HRI)
  Presented talk for accepted paper 2015
- The AAAI Conference on Artificial Intelligence (AAAI)
  Presented robot demo 2014
- The Cognitive Science Society Annual Conference (CogSci)
  Presented robot demo 2014
- The IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
  Presented talk for accepted paper and invited talk for the DevSor Workshop 2013
- The First Summer School on Social Human-Robot Interaction, UK 2013
- The Conference Towards Autonomous Robotic Systems (TAROS)
  Presented talk for accepted paper 2011

Work Experience

- **Student-teacher at Sidney Stringer School, Coventry, UK** 2009
  The Student Associates Scheme, UK

  Worked within the Mathematics Department as a student-teacher providing help for students during classes, raising students' aspirations for higher education. Produced and delivered presentations and a programming-based project and also delivered a lesson.

  Outcome: Developed important communication, presentation and leadership skills, effectively coordinated groups of students and worked together with teachers and other student-teachers in a motivating environment.

Skills

- Programming languages: C, C++, Python, Matlab, Java, Android, HTML, PHP, CSS, LaTeX
- Software/IDEs: Git, Eclipse, Visual Studio, NetBeans, Xcode, PhaseSpace Motion Capture System
- Robotics platforms: Baxter, Keepon, Nao, ROS, YARP

Languages

- Romanian – native language
- English – fluent: written and spoken
- Spanish – conversational: spoken
- French – basic: written and spoken