Elena Corina Grigore

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Research Interests

Robotics, machine learning, artificial intelligence, human-robot interaction, human-robot collaboration, adaptive systems, reinforcement learning, multi-agent systems.

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 Collaboration
- **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

[14] **E. C. Grigore** and B. Scassellati, "Discovering the Granularity of Primitive Actions from Human Motion Data in Human-Robot Teaming", In submission, 2017, January.

[13] ——, "Hierarchical Multi-Agent Reinforcement Learning through Communicative Actions for Human-Robot Collaboration", in *Proceedings of the Future of Interactive Learning Machines (FILM) Workshop at the 30th Annual Conference on Neural Information Processing Systems (NIPS)*, Full paper, Barcelona, Spain, 2016, December 5–10.

[12] **E. C. Grigore**, A. Pereira, J. J. Yang, I. Zhou, D. Wang, and B. Scassellati, "Comparing Ways to Trigger Migration between a Robot and a Virtually Embodied Character", in *Proceedings of the 8th International Conference on Social Robotics (ICSR)*, Kansas City, USA: Springer, 2016, November 1–3, pp. 839–849. **Best student paper finalist.**

[11] **E. C. Grigore**, A. Pereira, 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 Conference on Intelligent Virtual Agents (IVA)*, vol. 10011, Los Angeles, USA: Springer, 2016, September 20–23, pp. 51–63. **Best paper finalist.**

[10] A. Suman, R. Marvin, **E. C. Grigore**, H. Admoni, and B. Scassellati, "Prior Behavior Impacts Human Mimicry of Robots", in *Proceedings of the 25th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, New York, USA, 2016, August 26–31, pp. 1057–1062.

[9] **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, March 7–10, pp. 615–616.

[8] **E. C. Grigore**, A. Pereira, and B. Scassellati, "Modeling Motivational States in Adaptive Robot Companions", in *2015 AAAI Fall Symposium Series*, 2015, November 12–14.

[7] **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, June 29–July 3, pp. 379–384.

[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, March 2–5.

[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, October 13–16, 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, August 25–29, pp. 924–929.

[3] **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, November 3–7, pp. 22–24.

[2] **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, November 3–7, pp. 4622–4629.

[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, August 31–September 2, 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"
- **Best Student Paper Finalist, International Conference on Social Robotics (ICSR)** 2016
  "Comparing Ways to Trigger Migration between a Robot and a Virtually Embodied Character"
- **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 collaboration* 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 reinforcement learning in single- and multi-agent settings, where the robot's aim is to provide supportive behaviors in human-robot collaboration scenarios.
  - *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

- Organizing Committee
  - ACM/IEEE International Conference on Human-Robot Interaction, Pioneers Workshop
    Panel Chair 2017

- Conference Refereeing service
  - IEEE/RSJ International Conference on Intelligent Robots and Systems 2017
  - 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
- Mentoring high-school and undergraduate students on research projects 2013 – 2017
- 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

Invited Talks

- Virtual Assistant Summit, San Francisco, CA
  Can You Lend Me a Hand? Helpers of the Future 2017
- STEM Coffee Hour Facilitator, Cheshire, CT
  How is AI Shaping Robotics? 2017
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
  International Workshop on Developmental Social Robotics (DevSor), Tokyo
  Feasibility of SAR Approaches – Helping Children with Learning Tasks 2013

Conferences and Summer Schools Attended

- ACM/IEEE International Conference on Human-Robot Interaction (HRI)
  Organized and moderated the Pioneers Workshop Panel 2017
- Annual Conference on Neural Information Processing Systems (NIPS)
  Presented talk for workshop paper 2016
- International Conference on Intelligent Virtual Agents (IVA)
  Presented paper for best paper finalist category 2016
- International Conference on Social Robotics (ICSR)
  Presented paper for best student paper finalist category 2016
- International Conference on Machine Learning (ICML) 2016
- International Joint Conference on Artificial Intelligence (IJCAI) 2016
- 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
- International Conference on User Modelling, Adaptation and Personalization (UMAP)
  Presented talk for accepted paper 2015
- ACM/IEEE International Conference on Human-Robot Interaction (HRI)
  Presented talk for accepted paper 2015
- AAAI Conference on Artificial Intelligence (AAAI)
  Presented robot demo 2014
- Cognitive Science Society Annual Conference (CogSci)
  Presented robot demo 2014
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
  Presented talk for accepted paper and invited talk for the DevSor Workshop 2013
- Summer School on Social Human-Robot Interaction, UK 2013
- 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, Java, Matlab, Android, HTML, PHP, CSS, LaTeX
- Software/IDEs: Git, Eclipse, Visual Studio, NetBeans, Xcode
- Robotics platforms: Baxter, Keepon, Nao, ROS, YARP
- Miscellaneous: PhaseSpace Motion Capture System

Languages

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