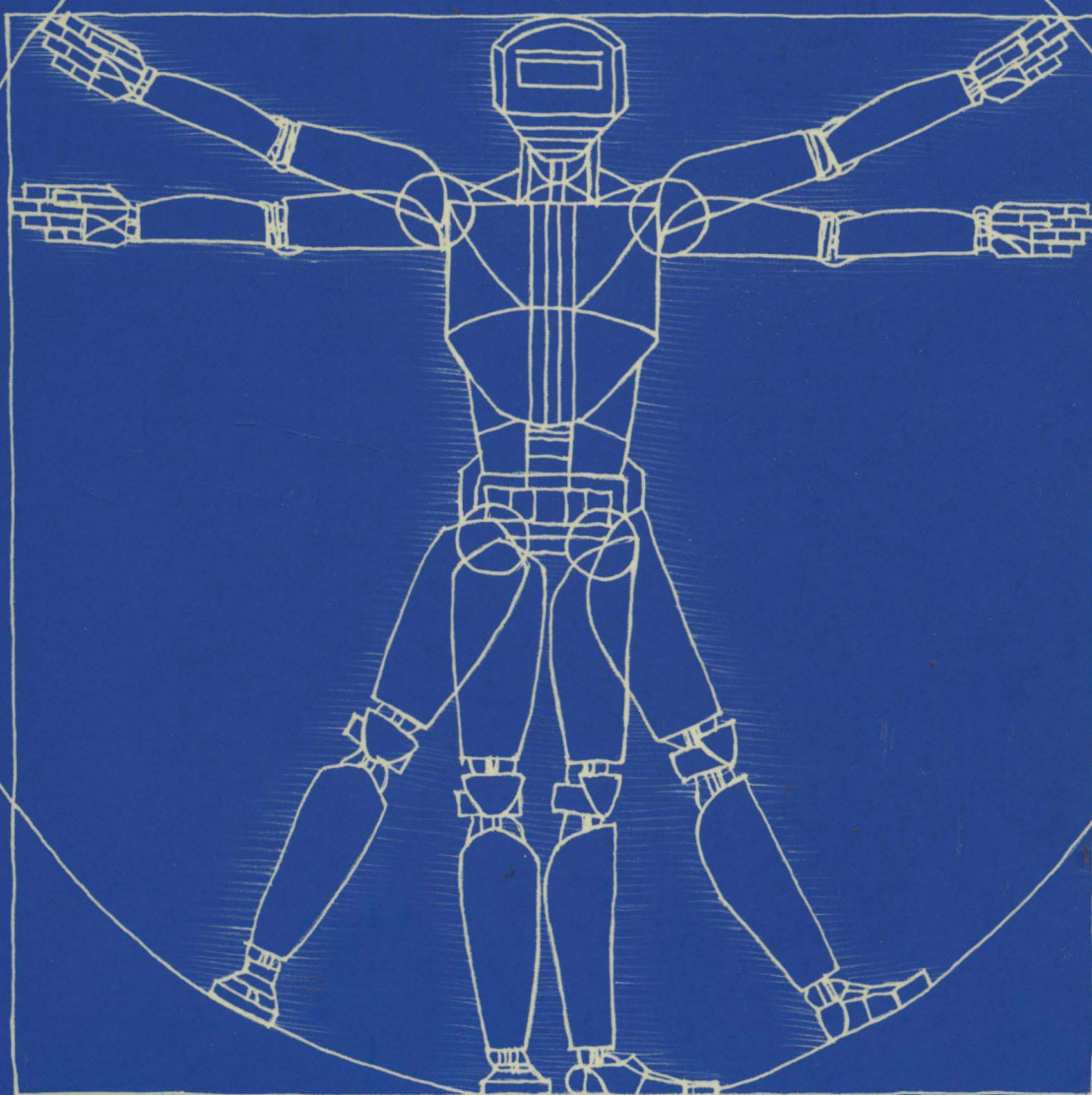


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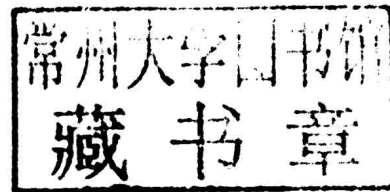
EDITED BY

NICHOLAS ROY, PAUL NEWMAN, AND SIDDHARTHA SRINIVASA

Robotics

Science and Systems VIII

edited by Nicholas Roy, Paul Newman, and Siddhartha Srinivasa



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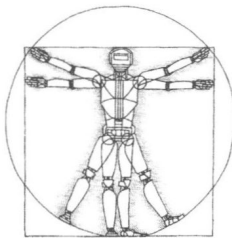
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Preface



This volume contains the 61 papers presented at *Robotics: Science and Systems (RSS) 2012*, held July 9-13 at the University of Sydney, Sydney, NSW, Australia. This year 177 papers were submitted, each of which was reviewed by four program committee members. Final decisions were made during an in-person area chair committee meeting yielding an acceptance rate of 35%. Readers will recall that in RSS 2011, 45 papers were accepted from a field of 183.

Beyond doubt, RSS continues to represent the best work from across the whole spectrum of the robotics science endeavour and as ever the diversity of papers submitted (and accepted) to RSS continues to astound and this volume bears ample witness to that. This, in conjunction with a RSS's single track format, furnishes the attendee and reader with a tour of what is judged by peer review to be new, exciting and sometimes challenging. This preface then is an appropriate place to thank you, the robotics community, for reviewing all the submitted papers and putting up with a stream of badgering emails from the area and program chairs. Without the hard work of reviewers, RSS would be greatly impoverished. Great thanks is due.

This year RSS took on a different format. In the hope that change is good, we tried to integrate workshops, plenaries, early career spotlights, technical paper talks and e-poster sessions. Every day began with a morning of workshops or tutorials. Here one could find discussions and interactions covering the latest and best of robotics science. The afternoon sessions began with a plenary from one of our five outstanding invited speakers. They presented both visions of the future and revelations of the state of the art in fields that one might not immediately associate with robotics but surely should or soon will:

- Dr. Anders Sandberg from the University of Oxford gave a talk titled "*The Robot and the Philosopher: Charting Progress at the Turing Centenary.*"
- Prof. Mandyam Srinivasan FRS from the University of Queensland gave a talk titled "*Small Brains, Small Planes.*"
- Prof. Michelle Simmons from the University of New South Wales University gave a talk titled "*Single Atom Devices for Quantum Computing.*"
- Prof. Zoubin Ghahramani from Cambridge University gave a talk titled "*Machine Learning as Probabilistic Modeling.*"
- Dr. Andrew Howard from SpaceX gave a talk titled "*Enter the Dragon: The SpaceX COTS Missions.*"¹

The afternoons proceeded with a mix of best paper finalist talks and early career spotlight talks, the latter given by three rising and recognised stars in the robotics community:

- Jan Peters from Technische Universitaet Darmstadt gave a talk titled "*Towards Motor Skill Learning for Robotics.*"
- Charlie Kemp from Georgia Institute of Technology gave a talk titled "*Mobile Manipulation for Healthcare.*"

¹With perhaps the most astounding tales of engineering gusto heard for some time.

- Cyrill Stachniss from the University of Freiburg gave a talk titled “*Towards Lifelong Navigation for Mobile Robots.*”

A highlight every afternoon was the all-important rapid-fire, e-poster teaser talks punctuated and regulated by the RSS gong. This year, instead of having one gargantuan poster session, each day ended with a smaller, refreshment-enhanced e-poster session with around 15 presenters. We hoped that these sessions would allow authors and attendees to interact in a meaningful and two way discussion without attendees being overwhelmed by 61 poster shows running in parallel. The jury is out but the wine was good.

Of course RSS 2012 was only possible because of industrial and institutional sponsoring. Special thanks to NICTA for Platinum level sponsorship, ONR Global and the Australian DSTO for Gold sponsorship, Google and NSW Trade and Investment for Silver, Willow Garage, CSIRO, ARAA and Springer for Bronze sponsorship. Thanks also to Google for funding the best paper award and to Springer for funding the best student paper award. We would like to recognize our technical sponsors: IEEE Robotics and Automation Society, the Association for the Advancement of Artificial Intelligence, the International Foundation of Robotics Research and the Robotics Society of Japan.

A huge thanks must go to the area chairs who once again brought panache, insight and professionalism to the paper reviewing process. There was a lot to do but it was worth it. They were: Pieter Abbeel (University of California, Berkeley), Tim Barfoot (University of Toronto), Han-Lim Choi (KAIST), Noah Cowan (Johns Hopkins University), Andrew Davison (Imperial College), Frank Dellaert (Georgia Institute of Technology), Ryan Eustice (University of Michigan), Seth Hutchinson (UIUC), Takayuki Kanda (ATR), George Kantor (Carnegie Mellon University), Hadas Kress-Gazit (Cornell University), Katherine Kuchenbecker (University of Pennsylvania), Ingmar Posner (University of Oxford), Cedric Pradalier (ETH Zurich), Luis Sentis (University of Texas at Austin), Siddhartha Srinivasa (Carnegie Mellon University), Cyrill Stachniss (University of Freiburg), Salah Sukkarieh (University of Sydney), Juan Tardos (University of Zaragoza), Sethu Vijayakumar (University of Edinburgh) and Gordon Wyeth (QUT).

We save the last and greatest thanks for Stefan Williams and Fabio Ramos for their unflappable approach to local arrangements, to Dylan Shell for elegant and timely action as Publicity Chair, to José Neira for building an outstanding program of workshops and tutorials, to Siddhartha Srinivasa for being the final gatekeeper of quality as Publications Chair, and finally, to Anca Dragan and Mehmet Dogar for dealing with the business of getting the conference booklet and this tome together. If this conference was a success, it was in no small part because of these folk.

Now please read on and enjoy what RSS 2012 brought to the community either here, on these pages, or online (including color images) at:

<http://www.roboticsproceedings.org/rss08/index.html>

Nicholas Roy, Massachusetts Institute of Technology
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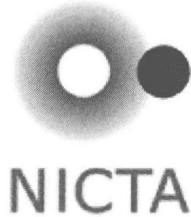
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