

# Philipp Michel

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## HOME ADDRESS

5825 Pierce St.  
Pittsburgh, PA 15232  
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## WORK ADDRESS

CMU Robotics Institute  
5000 Forbes Ave  
Pittsburgh, PA 15213  
Tel: (412) 268-8813

## Education

2004 - 2008

### Carnegie Mellon University

Pittsburgh, PA

Ph.D. Robotics, July 2008  
M.S. Robotics, May 2006

*Research:* Humanoid Robotics / Computer Vision. Lab director, CMU Honda ASIMO lab.  
*Thesis:* Seeing the Future: Integrating Perception & Planning for Humanoid Autonomy  
*GPA:* 4.00/4.00  
*Awards:* NVIDIA Fellowship, 2006 - 2007  
*Coursework:* Computer Vision, Machine Learning, Mechanics of Manipulation, Advanced Perception, Machine Perception & Modelling of Human Behavior, Applied Research Methods, Principles of Human-Robot Interaction.  
*Teaching:* TA, 16-264: Humanoid Robotics, Fall 2005  
*Activities:* RoboOrg Graduate Student Committee

2003 - 2004

### Yale University

New Haven, CT

Postgraduate Fellow (full-time research), Computer Science Department

*Research:* Social Robotics  
*Details:* Computer vision research on a humanoid robot created to study models of human social development. Applications of research to clinical studies of autism at the Yale Child Study Center. Funded by Yale University and the German National Merit Foundation.

2000 - 2003

### Cambridge University

Cambridge, UK

M.A. (Cantab)  
B.A. (Hons) in Computer Science  
First Class Honours (summa cum laude)

*Awards:*

- Triple Scholar of Churchill College for outstanding academic performance
- Scholar of the German National Merit Foundation (top 0.2% of university students)
- Fellow of Cambridge University European Trust
- Cambridge University prize for outstanding undergraduate dissertation

*Activities:*

- Competitive rowing & water polo for Churchill College
- Junior Common Room (student government) international officer

1994 - 1999

### Colegio Humboldt Schule

San José, Costa Rica

German Abitur, top graduate in school history  
Cumulative grade: 1.0

*Activities:* Competitive swimming at national level, 4 years of acting.

## Experience

August 2008 - present

### Goldman Sachs

Tokyo, Japan

Associate, Equity Derivatives Trading

# Philipp Michel

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<i>June - August 2007</i>	<b>UBS</b> Summer Associate, Equities Trading <ul style="list-style-type: none"><li>• Rotations in Quant, Electronic Volatility Trading and Derivatives Trading</li><li>• Summer project: Modeling &amp; visualizing option greeks and premium decay</li><li>• Participated in extensive training program</li><li>• Offer for permanent employment</li></ul>	Stamford, CT / New York, NY
<i>June - July 2004</i>	<b>Wolfram Research International</b> Developer, Special Projects Office  Authored and optimized image processing / computer vision algorithms for the Mathematica digital image processing package.	Concord, MA
<i>June - September 2002</i>	<b>Goldman Sachs International</b> Summer Analyst, Enterprise Technology <ul style="list-style-type: none"><li>• Re-designed the equity trading unix frontend for all european offices</li><li>• Automated &amp; expedited trading workstation deployment process</li><li>• Engineered compliance of third-party software with security &amp; auditing guidelines</li><li>• Spent extensive time on trading floor, working alongside Equities traders</li><li>• Participated in firmwide training program</li><li>• Subsequent offer for permanent employment</li></ul>	London, UK
<i>June - July 2001</i>	<b>Robert Bosch AG</b> Intern, IT Department  Automated company-wide migration to Windows 2000 / Active Directory. Worked in front-line server & network operations for an 8000 user production plant.	Bamberg, Germany
<b>Academic</b> <i>June 2005 - present</i>	<b>AIST Digital Human Research Center</b> Visiting Researcher Postdoctoral Fellow / Summer Fellow, Japan Society for the Promotion of Science (2008 / 2005)  <i>Research:</i> GPU-accelerated real-time 3D tracking for autonomous navigation / stair climbing on an HRP-2 Promet humanoid robot. Image- and range-based perception & mapping, motion capture, footstep planning.	Tokyo, Japan
<i>June 2003 / April 2004</i>	<b>A New Kind of Science Summer School &amp; Conference</b> Student, Presenter  Worked under Stephen Wolfram on ‘Visualizing Learning Systems’, investigating basins of attraction in neural networks and symbolic systems.	Providence, RI & Boston, MA, USA
<b>Publications</b>	Michel, P. (2008) Integrating Perception & Planning for Humanoid Autonomy. <i>Ph.D. Thesis, CMU-RI-TR-08-35, Robotics Institute, Carnegie Mellon University, July 2008.</i>  Michel, P., Chestnutt, J., Kagami, S., Nishiwaki, K., Kuffner, J. and Kanade, T. (2007) GPU-accelerated Real-Time 3D Tracking for Humanoid Autonomy. <i>Proceedings of the JSME Robotics and Mechatronics Conference (ROBOMECH), June 2008.</i>  Michel, P., Scheurer, C., Kuffner, J., Vahrenkamp, N. and Dillmann, R. (2007) Planning for Robust Execution of Humanoid Motions using Future Perceptive Capability. <i>Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), October 2007.</i>	

Michel, P., Chestnutt, J., Kagami, S., Nishiwaki, K., Kuffner, J. and Kanade, T. (2007) GPU-accelerated Real-Time 3D Tracking for Humanoid Locomotion and Stair Climbing. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, October 2007.

Michalowski, M., Sabanovic, S. and Michel, P. (2006) Roillo: Creating a Social Robot for Playrooms. *Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, September 2006.

Michel, P., Chestnutt, J., Kagami, S., Nishiwaki, K., Kuffner, J. and Kanade, T. (2006) Online Environment Reconstruction for Biped Navigation. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, May 2006.

Chestnutt, J., Michel, P., Nishiwaki, K., Kuffner, J. and Kagami, S. (2006) An Intelligent Joystick for Biped Control. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, May 2006.

Stilman, M., Michel, P., Chestnutt, J., Nishiwaki, K., Kagami, S. and Kuffner, J. (2005) Augmented Reality for Robot Development and Experimentation. *CMU Robotics Institute Technical Report CMU-RI-TR-05-55*, November 2005.

Michel, P., Chestnutt, J., Kuffner, J. and Kanade, T. (2005) Vision-Guided Humanoid Footstep Planning for Dynamic Environments. *Proceedings of the IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, December 2005.

Michel, P., Gold, K. and Scassellati, B. (2004) Motion-Based Robotic Self-Recognition. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, September 2004.

Michel, P. and El Kaliouby, R. (2003) Facial Expression Recognition using Support Vector Machines. *Proceedings of the 10<sup>th</sup> International Conference on Human-Computer Interaction (HCII)*, June 2003.

Michel, P. and El Kaliouby, R. (2003) Real Time Facial Expression Recognition in Video using Support Vector Machines. *Proceedings of the Fifth International Conference on Multimodal Interfaces (ICMI)*, November 2003.

**Professional Service** Reviewer, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2004  
Reviewer, IEEE-RAS International Conference on Humanoid Robots (Humanoids), 2007  
Reviewer IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2008

**Languages** German (native). Native-level proficiency in English, Spanish. Conversational Greek. Intermediate Japanese.

**Technical Skills** C/C++ (4 yrs), Java (5 yrs), Matlab (3 yrs), Mathematica (3 yrs), SQL, Excel, Perl, Unix, others.