Oscar Beijbom

CONTACT

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EDUCATION

University of California, San Diego
Ph.D. in Computer Science, expected graduation date: June 2015
M.S. in Computer Science, June 2012. GPA 3.67

Lund University
B.S. & M.S. in Engineering Physics, March 2007. GPA 4.9 (3-5 scale)

ACADEMIC EXPERIENCE

Department of Computer Science, UCSD *Graduate Student Researcher*
San Diego, USA. September 2009 -
"Annotating the Worlds Oceans: Computer Vision Methods for Scientific Data Analysis"
Advisor: Professor David Kriegman

- Texture based recognition & segmentation in organic images.
- Cost sensitive learning for Support Vector Machines and Boosting.
- Underwater color correction methods for computer vision.
- CoralNet: A web tool for automated underwater image annotation
  - Manual and automated annotation of user uploaded images
  - Used by researchers, agencies and private parties globally
  - Provides a ever-growing web-scale dataset for texture based image analysis.

Department of Mathematics, Lund University *M.S. Thesis Scholar*
Lund, Sweden September 2006 - March 2007
"Single Image Focus Level Assessment Using Support Vector Machines"
Advisor: Professor Karl Åstrom.
My thesis work was done in collaboration with a company in Lund, Sweden: Cellavision AB. Cellavision manufactures equipment for automatic analysis of blood smears. [www.cellavision.com]

- Developed novel method for autofocus that utilize a multi-class machine learning methodology and low-level image features, including color and texture. The method is protected with an international patent, and it's implemented in the Cellavision products. The Master's thesis report received several awards.
- Worked with Cellavision engineers to collect training and test data.

Department of Mathematics *Research Assistant*
Lund, Sweden March 2007 - June 2007
SME-robot is a large, international EU financed project. [www.smerobot.org]

- Worked on robot camera calibration using structure from motion.

PROFESSIONAL EXPERIENCE

Microsoft Research *Research Intern*
Seattle, WA July 2013 - September 2013
Microsoft Research is Microsofts research department, and one of the largest computer science research institutes in the world. I was a summer intern in the Computational User Experience group where I worked with Neel Joshi and Dan Morris on estimating nutritional information from images of food.

- Project scoping, definition, and investigation of related work.
- Managed data collection from several food vendors.
- Developed novel algorithms for robust nutritional estimation from food images.

Hövding AB *Head of Research*
Malmö, Sweden June 2007 - September 2009
I was the first employee at Hövding, the company behind the "invisible" bicycle helmet with the same name. The helmet is a collar that is worn around the neck. It contains a folded up airbag that inflates and protects the user in the event of an accident. Hövding received the 2011 Index Award. [www.hovding.com]

- Responsible for hardware and software development for the accident detection system.
- Developed a real time algorithm, based on machine learning, that takes data from motion sensors as input, and determines if a rider is in an accident. International patent is pending.
- Managed large-scale data collection with stunt actors and students.
- Worked with subcontractors to develop and identify electronic components
- Hired, and managed a team of engineers.

McKinsey & Company *Junior Consultant*
Stockholm, Sweden June 2005 - September 2005
McKinsey is a management consulting firm, advising corporations, banks, and holding companies on strategic and tactical issues. [www.mckinsey.com]

- Worked in a small team to quickly collect and analyze data for tasks such as mergers & acquisitions, procurement, and marketing.

Teaching Experience

Department of Computer Science, UCSD *Teaching Assistant*
San Diego, USA 2013 -

- *Introduction to Computer Vision.* Led sections, gave occasional lectures, prepared and graded homework assignments.

Lund University *Graduate student instructor*
Lund, Sweden 2001 - 2004

- *Linear Algebra.* Prepared and led sections.
- *Calculus.* Prepared and led sections.
- *Static and Dynamic mechanical systems.* Prepared and led sections.
- *Programming in Java.* Prepared and led sections and labs.

Publications & Patents

M. Gonzalez-Rivero, P. Bongaerts, O. Beijbom, O. Pizarro, A. Friedman, A. Rodriguez-Ramirez, B. Upcroft, D. Laffoley, D. Kline, R. Vevers, O. Hoegh-Guldberg. *"The Catlin Seaview Survey - kilometre-scale seascape assessment, and monitoring of coral reef ecosystems"*. Aquatic Conservation: Marine and Freshwater Ecosystems, 2014.

O. Beijbom, M. Saberian, N. Vasconcelos, D. Kriegman. *"Guess Averse Loss Functions For Cost-Sensitive Multiclass Boosting"*. International Conference on Machine Learning (ICML), Beijing, China, 2014.

T. Treibitz, B.P.Neal, D.I.Kline, O. Beijbom, P.L.D. Roberts, B.G. Mitchell *"Wide Field-of-View Daytime Fluorescence Imaging of Coral Reefs"*. Journal of the Marine Technology Society, 2013.

S. Branson, O. Beijbom, S. Belongie. *"Efficient Large-Scale Structured Learning"*. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Portland, Oregon, 2013.

O. Beijbom, P.J. Edmunds, D.I. Kline, G.B. Mitchell, D. Kriegman. *"Automated Annotation of Coral Reef Survey Images"*. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Providence, Rhode Island, 2012.

O. Beijbom. *"Domain Adaptations for Computer Vision Applications"*. Research exam: University of California San Diego, arXiv:1211.4860, April 2012.

O. Beijbom. *"A method, device, and computer program product for event detection while preventing misclassifications"* (W83960002). International filing date: 20.07.2009.

S. Hedlund, O. Beijbom, M. Almers. *"A method for determining an in-focus position and a vision inspection system"* (PCT/EP20008/051993). International filing date: 19.02.2008.

O. Beijbom. *"Single Image Focus Level Assessment Using Support Vector Machines"*. Master's Thesis Report, Lund University, 2007.

In Submission

O. Beijbom. *"Cost-Effective Sampling for Pairs of Annotators"*, Proceedings of the National Academy of Sciences, 2014.

O. Beijbom, P. J. Edmunds, T-Y Fan, J. Smith, C. Roelfsema, M. Dunlap, V. Moriarty, B. P. Neal, S. Chan, T. Treibitz, D. I. Kline, B. G. Mitchell, D. Kriegman. *"Towards automated annotation of benthic survey images: variability of human experts and operational modes of automation"*, Plos ONE, 2014.

T. Treibitz, B. P. Neal, D. I. Kline, O. Beijbom, P. L. D. Roberts. *"Wide Field-of-View Fluorescence Imaging of Coral Reefs"*, Scientific reports, 2014.

O. Beijbom, D. Morris, S. Saponas, N. Joshi. *"Menu-Match: Restaurant-Specific Food Logging from Images"*, Winter Conference on Applications of Computer Vision, 2014.

O. Beijbom, T. Treibitz, B. Neal, D. Kline, B.G. Mitchell, D. Krigeman. *"Boosting Automated Annotation Accuracy Using Fluorescence Imaging"*, Marine Ecology Progress Series, 2014.

Conference Talks

O. Beijbom, T. Treibitz, B. P. Neal, D. Kriegman, S. Belongie, P.J.Edmunds, D.I.Kline, B.G.Mitchell, *"Automated Coral Reef Image Annotation Using Computer Vision"*, International Coral Reef Symposium, 2012.

O. Beijbom, T. Treibitz, B. P. Neal, D. Kriegman, S. Belongie, P. J. Edmunds, D. I. Kline, B. G. Mitchell, *"Automated Coral Reef Analysis Using Computer Vision"*, American Society of Limnology and Oceanography Aquatic Sciences Meeting, 2011.

Services

Reviewer for the following journals and conferences
Neural Information Processing Systems (NIPS), Computer Vision and Image Understanding (CVIU), International Conference on Computer Vision (ICCV)

Honors & Awards

Selection of received scholarships and awards:

- **Scholar, BLANCEFLOR foundation**, 2012
- **Scholar, Lars Hiertas Minne foundation**, 2011 & 2012
- **Best master thesis in networked vision**, Axis communications, 2009
- **Outstanding master thesis award**, Sparbankstiftelsen Skåne, 2007
- **Grant for graduate studies abroad**, Sparbankstiftelsen Färs och Frosta, 2007

Skills

Languages: Native Swedish, fluent English, good Spanish and German
Programming Languages: C, C++, Java, Python, MATLAB, Prolog, OCaml
Other computer skills: Vim (editing), Django(web development)