ISPRS President Chen Jun
National Geomatics Centre of China
28 Lianhuachixi Road
Haidian District
Beijing 100830
PR China

Hanover, 11 January 2016

Application for the Otto von Gruber Award 2016

Dear President Chen Jun,

I am writing to apply for the Otto von Gruber Award 2016. The core paper I would like to nominate is


It was presented at the IEEE Conference on Computer Vision and Pattern Recognition 2015 in Boston. Together with publications at the 37th German Conference on Pattern Recognition (GCPR 2015) and the ISPRS Workshop on Image Sequence Analysis 2015 (ISA 2015) it forms a coherent series of three related papers.

All three publications address the image-based estimation of displacement fields based on discrete inference in probabilistic graphical models. They contribute to the integration of matching, tracking and object extraction. The topic is highly relevant for current key technologies, such as mobile robotics and autonomous driving.

The central article, cited above, introduces a novel approach to three-dimensional scene flow estimation together with a new public benchmark data set. Thus, it provides algorithmic insights into an important aspect of comprehensive scene understanding as well as a stimulus for the research community. The latter is documented by the fact that the source code is available and the data set is online as part of the well accepted KITTI benchmark suite.

To further advance this line of research, the results were augmented with a semantic interpretation. An Active Shape Model was introduced enabling the parameterized reconstruction of objects and the integration of high-level prior knowledge. This contribution was presented to ISA 2015 and published in

An important input to scene flow algorithms consists of robust optical flow matches. At GCPR 2015 I presented the third article of the series

In: Pattern Recognition, LNCS 9358, Springer International Publishing, pp. 16–28

which addresses this topic. The proposed method adapts discrete inference to the optimization of optical flow matches based on a dedicated conditional random field model. It yields state-of-the-art performance on two relevant benchmark data sets. In the scope of my PhD thesis, I am currently working on, the method will be combined with the scene flow approach to further improve the results.

The described line of work was started in the scope of a six-monthly doctoral scholarship I was granted in 2014 at the Max Planck Institute for Intelligent Systems in Tübingen, Germany. Subsequently I pursued the topic within a close interdisciplinary collaboration between the MPI and the Institute of Photogrammetry and Geoinformation in Hanover, Germany where I plan to submit my PhD thesis in April 2016.

Thank you for your consideration.

Kind regards,

M. Menze

Moritz Menze

*Enclosures:*
Curriculum Vitae
Identity Card
Papers


In: Pattern Recognition, LNCS 9358, Springer International Publishing, pp. 16–28
Dipl.-Ing. Moritz Menze
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Born 27 November 1982

EDUCATION

Leibniz Universität Hannover  September 2010 – January 2016
Research Assistant
Institute of Photogrammetry and GeoInformation
Research Focus: Stereoscopic Image Sequence Analysis,
Discrete Optimization for Scenes in Motion

Max Planck Institute for Intelligent Systems, Tübingen  March 2014 – August 2014
Six-monthly Doctoral Scholarship
Perceiving Systems Department

Volkswagen AG, Wolfsburg  June 2007 – March 2008
Diploma Thesis on 3D photogrammetric analysis of car safety tests (1.3)

Leibniz Universität Hannover  October 2003 – May 2008
Geodesy and Geoinformatics: Diploma (1.5)

WORK EXPERIENCE

Hella Aglaia Mobile Vision GmbH  Starting in February 2016
Software Developer

Bertrandt Ingenieurbüro GmbH  June 2008 – September 2010
Test Engineer
Joint projects with Volkswagen AG, Wolfsburg
**TECHNICAL STRENGTHS**

Languages: German, English

Strong Programming Skills in Matlab / C++

Experience in Scientific Computing on cluster systems

**REFEREED PUBLICATIONS**

In: Pattern Recognition, LNCS 9358, Springer International Publishing, pp. 16–28


*A Stereoscopic Approach for the Association of People Tracks in Video Surveillance Systems.*

**NON-REVIEWED CONFERENCE PAPERS**

In: International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences XL-3, ISPRS Technical Commission III Symposium, Zurich, Switzerland, September 2014, pp. 227–230

*Using Stereo Vision to support the Automated Analysis of Surveillance Videos.*
In: International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences XXXIX-B3, S. 47–51, 2012