

The Carl Pulfrich Award Remembering Dr. Carl Pulfrich

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C. Pulfrich.

Dr. Carl Pulfrich

Sept. 24, 1858 – Carl Pulfrich was born

1871 German Empire, Otto von Bismarck first
“Reichs” chancellor

1881 C. Pulfrich finished his PhD in Optics at
Bonn University, collaborated with chemists to
build a new refractometer (as Dr. E. Abbe did at
Zeiss Jena)

1890 C. Pulfrich joined Carl Zeiss Jena to
design optical instruments

1909 C. Pulfrich launched The Photogrammetric
Week Series (Oct 4-9, 1909), continued Phowo
organization 1910-1913

Aug. 12, 1927 Dr Carl Pulfrich passed away

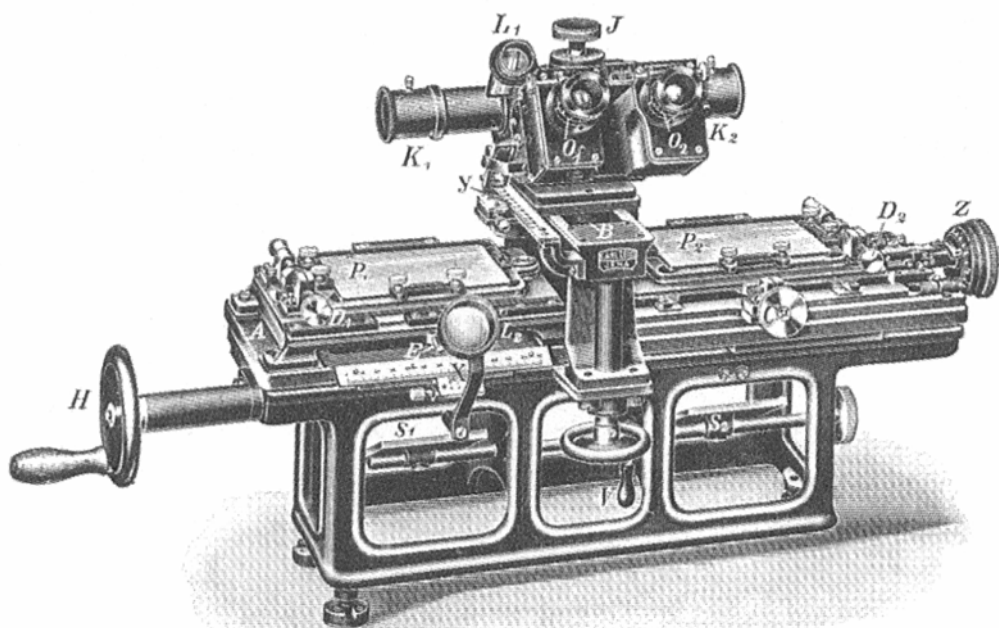
Universität Stuttgart

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The Carl Pulfrich Award Some Milestones



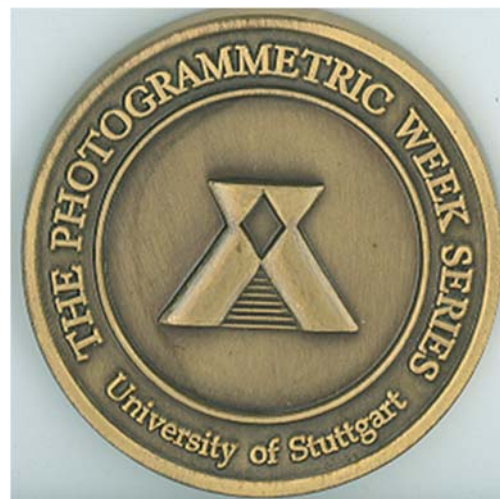
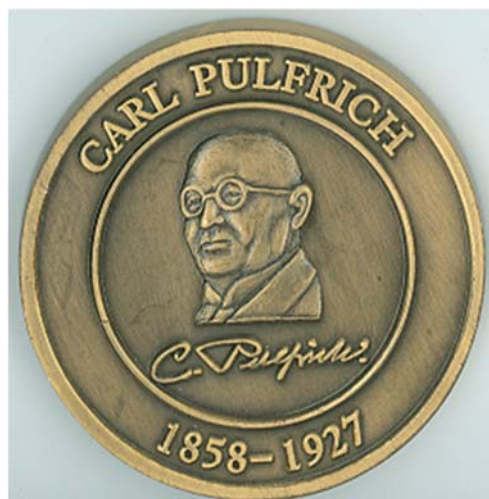
- 1968 Carl Zeiss, Oberkochen launched the Carl Pulfrich Award
- 1998 Joint Venture Carl Zeiss/Intergraph: Z/I Imaging
- 2001 Re-launch of the Carl Pulfrich Award by Z/I Imaging
- 2002 Intergraph became 100% shareholder of Z/I Imaging
- 2005 Re-launch of the Carl Pulfrich Award by Intergraph
- 2005 Hexagon acquired Leica Geosystems
- 2010 Hexagon acquired Intergraph
- 2011 Re-launch of the Carl Pulfrich Award by Hexagon Geosystems



The Carl Pulfrich Award Remembering Dr. Carl Pulfrich



- September 2009 The Institute for Photogrammetry, University of Stuttgart, launched the Carl Pulfrich Medal@The 100th Anniversary of The Photogrammetric Week Series to recognize Phowo Speakers and long-term attendees



The Carl Pulfrich Award



- Value of the award: US\$ 7.500,-
- Focus of the award: Photogrammetry, Remote Sensing & Earth Sciences
- Carl Pulfrich Award Committee 2011
 - Prof. D. Fritsch (Chairman)
 - Prof. C. Gläser, DGPF President, Germany
 - Prof. O. Altan, ISPRS President, TU Istanbul, Turkey
 - Prof. Ch. Heipke, Leibnitz Univ. Hannover, Germany
 - Prof. W. Wagner, TU Vienna, Austria
 - Prof. K. Schindler, ETHZ, Switzerland
 - Prof. C. Fraser, Melbourne Univ., Australia
 - Prof. M. Madden, Univ. Athens, USA
 - Dr. J. Dold, Hexagon Geosystems, Heerbrugg, Switzerland
 - J. Ickes, Intergraph, Huntsville, USA

The Carl Pulfrich Award Laureates



Table 1: Laureates of the Carl Pulfrich Award

Year	Name	Univ./City	Country
1969	Dr.-Ing. Manfred Bonatz	Bonn	Germany
1971	Dr.-Ing. Karl Kraus	Stuttgart	Germany
1973	Dr.-Ing. Jürgen Müller	Hannover	Germany
1975	Prof. Dr.-Ing. Manfred Ruopp	Stuttgart	Germany
1977	Dr.-techn. Juhani Hakkarainen Dr.-Ing. Hartmut Schmidt	Helsinki Bonn	Finnland Germany
1979	Dipl.-Math. Hermann A. Klein	Stuttgart	Germany
1981	Prof. Dr.-Ing. Heribert Kahmen	Hannover	Germany
1983	Prof. Dr. Charles C. Counselman III	Cambridge	USA
1985	Dr. W. Göpfert	Frankfurt	Germany
1987	Dr.-Ing. W. Förstner Dipl.-Ing. H. Schewe	Stuttgart Stuttgart	Germany Germany
1989	Dr.-Ing. Peter Lohmann	Hannover	Germany
1991	Dipl.-Ing. H. Haggrén Dipl.-Ing. A. Wehr	Helsinki Stuttgart	Finnland Germany
1993	Ir. B. Beers Dr. Kurt Novak	Vught Columbus	The Netherlands USA
1995	Dr.-Ing. H.-G. Maas Dr.-Ing. H.-J. Mönicke	Zurich Stuttgart	Switzerland Germany
1997	Dr. Peter Frieß Dr. Joachim Lindenberger	Stuttgart/Rheine Stuttgart/Rheine	Germany Germany
1999			
2001	Dr. Claus Brenner	Stuttgart	Germany
2003			
2005	Dr. Li Zhang	Zurich	Switzerland
2007	Markus Gerke, Sönke Müller, and Dr. Andreas Busch	Hannover Frankfurt/Main	Germany
2009	Dr. Devrim Akca Dr. Michael Cramer	Zurich Stuttgart	Switzerland Germany
2011			

Dr. Heiko Hirschmüller

Oberpfaffenhofen

Germany

The Carl Pulfrich Award 2011

Why Semi Global Matching?

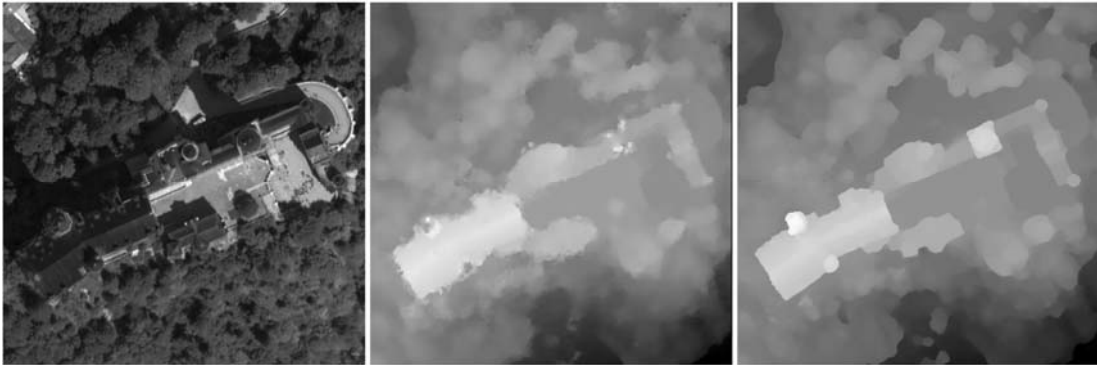


- Matching: dense to pixel-pixel, intensity-based
- Global: optimization approach using a global model
- Semi: approximation \Rightarrow fast numerical solution

Intensity image

Disparity image using a correlation matching method

Disparity image using Semi Global Matching



Castle Neuschwanstein, Bavaria, Germany

source: Hirschmüller, Heiko (2005) – Accurate and efficient stereo processing by Semi Global Matching and Mutual Information

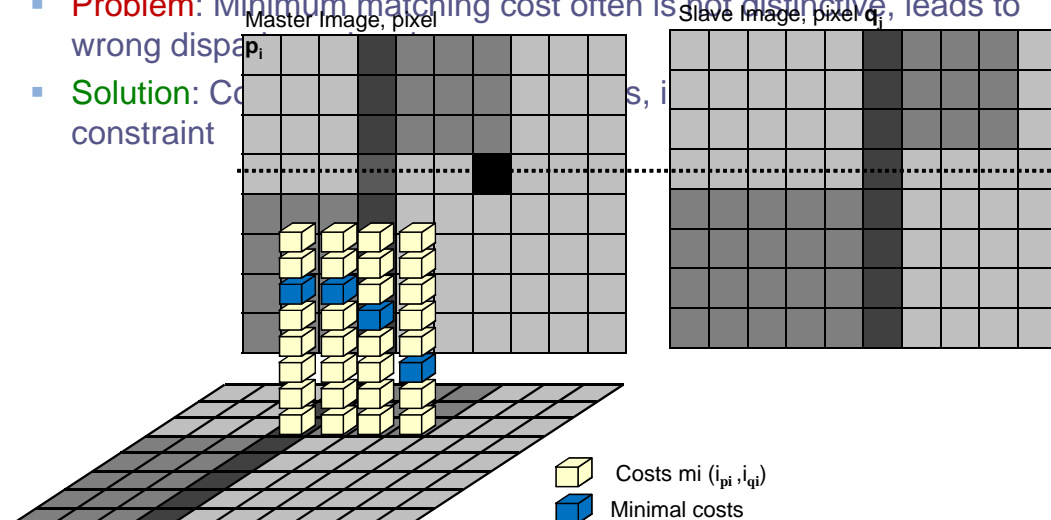


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Theory - Semi Global Matching (SGM)



- Initial disparity image defines correspondent pixels (p, q) in master and slave image
- Pixelwise costs $mi(i_p, i_q)$ are calculated
- Matching cost of potential matches are assigned to 3d structure
- Problem:** Minimum matching cost often is not distinctive, leads to wrong disparity
- Solution:** Cost-volume constraint



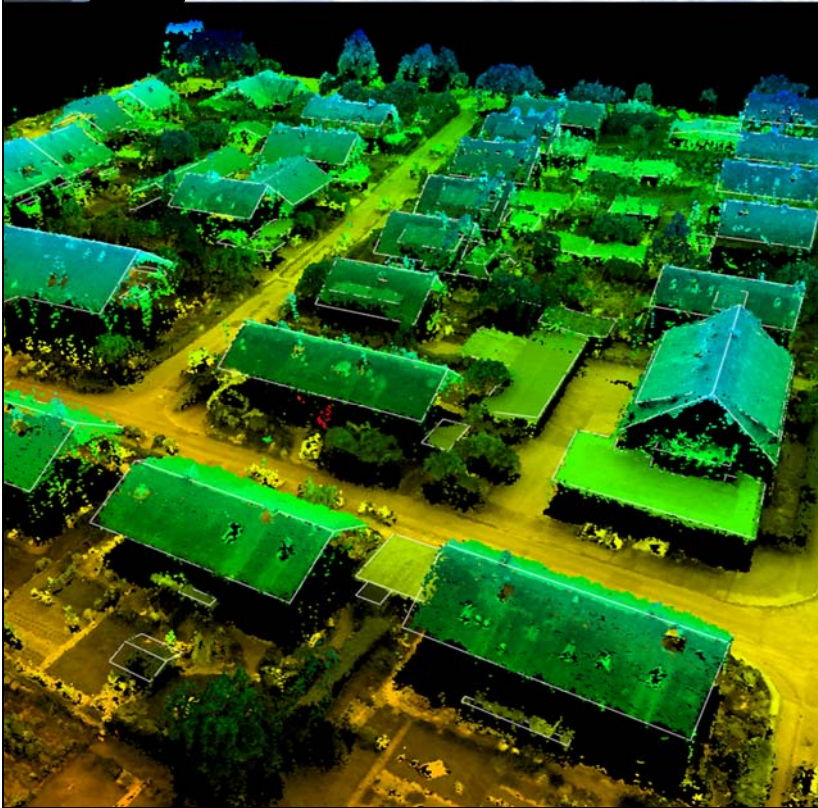
Costs $mi(i_{p_i}, i_{q_j})$
 Minimal costs





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SGM as Game Changer in Photogrammetry & Computer Vision



Residential Area

Vaihingen Enz, Germany
UltraCam X, 8 cm
GSD, 80% Overlap

White: roof borders from stereo plotting
height coded coloring



The Carl Pulfrich Award 2011

Dr. Heiko Hirschmueller



Congratulations for the Carl
Pulfrich Award 2011!

