

Title (en)

SYSTEM FOR DETERMINING A WORKING-FACE IMAGE

Title (de)

SYSTEM ZUM ERMITTTELN EINES ORTSBRUSTBILDES

Title (fr)

SYSTÈME PERMETTANT L'ACQUISITION D'UNE IMAGE D'UN FRONT D'ATTAQUE

Publication

**EP 3028006 B1 20191218 (DE)**

Application

**EP 14744032 A 20140721**

Priority

- AT 501072013 U 20130730
- EP 2014065652 W 20140721

Abstract (en)

[origin: WO2015014655A2] The invention relates to an assembly (120) for determining an image of at least one region of a working face (122) of a rock mass (102), which working face is processed by a tunnel boring machine (180), wherein the assembly (120) comprises a rotatable drilling head (150) for the tunnel boring machine (180) for removing rock material of the working face (122), an image recording device (124), which is attached to the drilling head (150) in order to record image data of at least one section (600) of the working face (122), and an image processing device (126), which is designed to process image data of a plurality of sections (600) of the working face (122), which are recorded by means of the image recording device (124) in particular during the rotation of the drilling head (150), and for reconstructing the image of at least the region of the working face (122) from the image data of the plurality of sections (600) of the working face (122). In addition, a regular or continuous optical analysis of the working face can provide additional information that is useful for improving or optimizing the control of the tunnel boring machine.

IPC 8 full level

**G01C 7/06** (2006.01)

CPC (source: AT EP US)

**E21B 44/00** (2013.01 - AT); **E21B 47/002** (2020.05 - AT EP US); **E21C 39/00** (2013.01 - EP); **E21D 9/00** (2013.01 - EP)

Citation (examination)

- US 5657073 A 19970812 - HENLEY STUART L [CA]
- US 7215364 B2 20070508 - WACHTEL ROBERT A [US], et al

Citation (opposition)

Opponent : 3GSM GmbH

- JP H1136785 A 19990209 - KAJIMA CORP
- ANDREAS GAICH ET AL.: "Determining Structural Rock Mass Parameters Using a Computer Vision System", FELSBAU, vol. 21, no. 2, April 2003 (2003-04-01), XP055766028
- ANDREAS GAICH ET AL.: "Stereoscopic Imaging and Geological Evaluation for Geotechnical Modelling at the Tunnel Site", FELSBAU, vol. 17, no. 1, 1999, pages 15 - 21, XP055766035
- MARKUS PÖTSCH ET AL.: "Geotechnical Data Collection and Analysis in Jointed Rock", FELSBAU, vol. 25, no. 5, 2007, pages 66 - 73, XP055766044
- UMESH R. DHOND ET AL.: "Structure from Stereo - A Review", IEEE TRANSACTIONS ON SYSTEMS, MAN AND CYBERNETICS, vol. 19, no. 6, 1 November 1989 (1989-11-01), pages 1489 - 1510, XP000127015
- RICHARD SZELINSKI: "Computer Vision - Algorithms and Applications", 2011, SPRINGER, ISBN: 978-1-84882-934-3
- IRSCHARA A. ET AL.: "Efficient structure from motion with weak position and orientation priors", COMPUTER VISION AND PATTERN RECOGNITION WORKSHOPS (CVPRW), 2011 IEEE, 20 June 2011 (2011-06-20), pages 21 - 28, XP031926529
- RONCHELLA ET AL.: "A NOVEL IMAGE ACQUISITION AND PROCESSING PROCEDURE FOR FAST TUNNEL DSM PRODUCTION", ISPRS - INTERNATIONAL ARCHIVES OF THE PHOTOGRAHAMTRY, REMOTE SENSING AND SPATIAL INFORMATION SCIENCES, vol. XXXIX-B5, 2012, pages 297 - 302, XP055766049
- BESL ET AL.: "Active, optical Range Imaging Sensors", MACHINE VISION AND APPLICATIONS, vol. 1, 1988, pages 127 - 152, XP000196923, DOI: 10.1007/BF01212277

Cited by

DE202022106442U1; WO2024104640A1

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DOCDB simple family (publication)

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