Curriculum Vitae

I. Personal Details

Name:	Christoph Martin Monsberger
Date of Birth:	30.08.1989
Country of Birth:	Austria
Nationality:	Austria

II. Education

08/2016 - 10/2022 **PhD in Engineering Sciences: Surveying and Geoinformation**
Graz University of Technology, Austria
Thesis Title: Distributed Fiber Optic Shape Sensing in Structural and Geotechnical Engineering: Principles and Applications
Degree with *First Class Honors*

10/2012 - 06/2015 **Master in Geomatics Science**
Graz University of Technology, Austria
Thesis Title: Verteilte faseroptische Dehnungsmessung mit dem hochauflösenden Luna OBR 4600
Degree with *First Class Honors*

10/2008 - 10/2012 **Bachelor in Geomatics Engineering**
Graz University of Technology, Austria
Thesis Titels: Entwicklung eines Attitude-Modells am Beispiel GPS
Kontrolle der Stabilität des Netzes „Rosenhain“

II. Work Experience

Since 04/2021 **Managing Director and Co-Founder**
ACI Monitoring GmbH, Graz, Austria

04/2021 - 03/2022 **Research Assistant**
Graz University of Technology, Institute of Engineering Geodesy and Measurement Systems (Prof. Werner Lienhart), Austria

04/2016 - 03/2021 **University Assistant**
Graz University of Technology, Institute of Engineering Geodesy and Measurement Systems (Prof. Werner Lienhart), Austria

07/2015 - 03/2016	**Research Assistant** Graz University of Technology, Institute of Engineering Geodesy and Measurement Systems (Prof. Werner Lienhart), Austria
02/2015 - 06/2015	**Student Research Assistant** Graz University of Technology, Institute of Engineering Geodesy and Measurement Systems (Prof. Werner Lienhart), Austria
06/2012 - 02/2015	**Surveying Engineer** Soljoy GmbH, Thal bei Graz, Austria
2012 – 2014	**Student Assistant** Graz University of Technology, Institute of Engineering Geodesy and Measurement Systems (Prof. Werner Lienhart), Austria
2011	**Student Assistant** Graz University of Technology, Institute of Engineering Geodesy and Measurement Systems (Prof. Fritz Brunner), Austria
07/2011 - 08/2011	**Surveying Engineer** Vermessung Müllner, Hartberg, Austria
07/2010	**Surveying Engineer** Vermessung Müllner, Hartberg, Austria

IV. Expertise and Research Projects

09/2022 – ongoing Design and Realization of Fiber Optic Extensometer

Position and Responsibilities	*Project and Design Leader* • Concept and Realization of a distributed fiber optic sensing system based on fiber optic sensing fibers along extensometer to extend/replace conventional sensing techniques with high-resolution measurements • Successful implementation and epoch-wise monitoring • Laboratory investigations
Clients/Funders	VERBUND Hydro Power GmbH
Realizations	09/2022 Limberg Dam (Austria)

04/2022 – 06/2022 Assessment of distributed strain profiles and tilt changes along highway bridges

Position and Responsibilities	*Project Manager* • Configuration of sensing network including DFOS (cable configuration design, interrogator selection, sensing circuit design, etc.), tilt sensors and geodetic measurements • Laboratory investigations and system calibration
Clients/Funders	ASFINAG – Autobahnen- und Schnellstraßenfinanzierungsaktiengesellschaft, Austria
Realizations	06/2022 Gschnitztalbrücke (Austria)

02/2022 – ongoing **Distributed subsidence monitoring along railway embankment using fiber optic sensing**

Position and Responsibilities

Project Manager

- Contract and compliance management
- DFOS design including cable configuration design, interrogator selection, sensing circuit design etc.
- Laboratory investigations and system calibration
- Installation of sensing cables in different configurations

Clients/Funders

HS2 – High Speed 2
BBV – Balfour Beatty Vinci
AECOM Ltd.

Realizations

02/2022 Fradley Wood (Great Britain)
09/2022 Curborough (Great Britain)

01/2020 – ongoing **Tunnel Integrity Monitoring System for the Deep Tunnel Sewerage System**

Position and Responsibilities

Design Manager

- DFOS design including cable configuration design, interrogator selection, sensing circuit design etc. Literature review of cable lifespan usage.
- Laboratory component test and beam load test including data analysis
- Precision error evaluation.
- Data analysis of validation mock up and review of calibration acceptance

Clients/Funders

Public Utilities Board Singapore (National Water Agency)
Ryobi Geotechnique International Pte Ltd

Realizations

01/2020 Deep Tunnel Sewerage System (Singapore)

12/2019 – ongoing **Structural monitoring of existing tunnel shotcrete linings**

Position and Responsibilities

Project and Design Leader

- Concept and Realization of a distributed fiber optic sensing system based on subsequently installed fiber optic sensing fibers along an existing shotcrete lining
- Successful installation of 700 m at a highway tunnel under construction

Clients/Funders

ASFINAG – Autobahnen- und Schnellstraßenfinanzierungsaktiengesellschaft, Austria

Realizations

12/2019 Tunnel Rudersdorf (Austria)

02/2019 – ongoing **Bridge monitoring during construction and operation using distributed fiber optic sensors**

Position and Responsibilities

Design Leader & Project Manager

- Contract and compliance management
- DFOS design including cable configuration design, interrogator selection, sensing circuit design etc.
- Software development for data acquisition and evaluation
- Data evaluation and analysis

Clients/Funders

Deutsche Bahn
Ingenieurbüro Schiessl Gehlen Sodeikat GmbH
ASFINAG – Autobahnen- und Schnellstraßenfinanzierungsaktiengesellschaft, Austria

Realizations 05/2020 Stuttgart S21 main station (Germany)
05/2023 Aurachbrücke (Austria)

08/2018 – ongoing **Structural integrity assessment along concrete tunnel linings using distributed fiber optic sensors**

Position and Responsibilities

Project Leader

- Design and development of the distributed fiber optic sensing approach
- Detailed laboratory investigations and system calibration
- Software development for data acquisition and evaluation
- Monthly measurements outside of the tunnel at tunnel control station without any interferences with the tunnel traffic
- Data evaluation and analysis

Clients/Funders ASFINAG – Autobahnen- und Schnellstraßenfinanzierungsaktiengesellschaft, Austria

Realizations 05/2019 Plabutschtunnel (Austria)

05/2018 – ongoing **Design and realization of long-term monitoring approach to assess the structural behavior of a secondary concrete tunnel linings**

Position and Responsibilities

Design Leader

- Design and development of a distributed fiber optic sensing approach to assess the long-term stress changes of a secondary tunnel lining
- Successful instrumentation of different cross sections of a secondary lining along the bench/invert as well as the top-heading section during the regular construction of the tunnel

Clients/Funders OEBB - Austrian Federal Railways, Austria
ASFINAG – Autobahnen- und Schnellstraßenfinanzierungsaktiengesellschaft, Austria

Realizations 11/2018 Tunnel Chain Granitztal (Austria)
05/2021 Semmering Base Tunnel (Austria)
08/2021 Tunnel Rudersdorf (Austria)
11/2022 Koralmbahn Baulos 3.1 (Austria)

07/2018 – 07/2021 **Assessment of crack patterns along plain concrete tunnel linings using distributed fiber optic sensing**

Position and Responsibilities

Design Leader

- Design and development of the distributed fiber optic sensing approach
- Detailed laboratory investigations, system calibration and comparison to simulation results

Clients/Funders Austrian Federal Ministry of Traffic, Innovation and Technology, Austria
OEBB - Austrian Federal Railways, Austria
ASFINAG – Autobahnen- und Schnellstraßenfinanzierungsaktiengesellschaft, Austria

Realizations 06/2019 Tauerntunnel (Austria)

10/2017 – 09/2018 Curvature and displacement monitoring along grouted anchors

Position and Responsibilities

Project Leader

- Design and development of a distributed fiber optic sensing approach to assess distributed curvature and bending characteristics along grouted anchors
- Detailed laboratory investigations with high resolution reference measurements for system's calibration
- Software development for autonomous data acquisition and evaluation
- Successful instrumentation of three different anchors with lengths of 5 m
- Installation at a highway construction site to autonomously monitor the anchors' bending behavior over several weeks
- Data evaluation and analysis

Clients/Funders German Federal Ministry of Education and Research, Germany

Realizations 08/2017 Unzmarkt (Austria)

01/2017 – 09/2017 Structural monitoring of concrete foundation piles of a high-rise building

Position and Responsibilities

Technical Expert

- Execution of epochwise measurements
- Data evaluation and analysis

Clients/Funders GTC Kappelmeyer GmbH, Germany

Realizations 11/2016 Zurich (Switzerland)

11/2016 – 06/2018 Continuous monitoring of shotcrete tunnel linings using distributed fiber optic sensors

Position and Responsibilities

Project Leader

- Design and development of a distributed fiber optic sensing approach to monitor strain/curvature profiles along conventional tunnel cross sections
- Laboratory investigations and system calibration
- Software development for autonomous data acquisition and evaluation
- Installation of sensing cables along two different tunnel cross section of a railway tunnel under construction
- Continuous measurements over several weeks started immediately after applying the shotcrete
- Data evaluation and analysis

Clients/Funders Austrian Federal Ministry of Traffic, Innovation and Technology, Austria
OEBB - Austrian Federal Railways, Austria
ASFINAG – Autobahnen- und Schnellstraßenfinanzierungsaktiengesellschaft, Austria

Realizations 03/2017 Semmering Base Tunnel (Austria)
02/2018 Semmering Base Tunnel (Austria)

04/2016 – 09/2021 Structural monitoring of concrete beam structures during controlled loading to analyze arising shear forces based on distributed fiber optic sensors

Position and Responsibilities

Project Leader

- Design and development of a distributed fiber optic sensing approach to assess strain profiles along longitudinal reinforcements, stirrups and inside the concrete
- Software development for autonomous data acquisition and evaluation

- Successful instrumentation of 5 beams with different setups
- Continuous measurements during controlled loading tests
- Data evaluation and analysis

Clients/Funders Graz University of Technology (TUG), Austria

Realizations 07/2016 Graz (Austria)
10/2016 Graz (Austria)
09/2019 Graz (Austria)
09/2021 Graz (Austria)

09/2015 – 03/2022 Continuous monitoring of curvature characteristics of a gas pipeline and automated alarming based on distributed fiber optic sensing

Position and Responsibilities *Technical Expert*

- Installation of sensing cables (in total about 900 m) for strain and temperature sensing along the pipeline
- Execution of control measurement

Clients/Funders OEBB - Austrian Federal Railways, Austria

Realizations 10/2015 Fröschnitzgraben (Austria)

07/2015 – 05/2016 Distributed fiber optic sensing along grouted strand anchors to assess strain profiles during geotechnical pull-out tests

Position and Responsibilities *Project Leader*

- Design and development of the DFOS monitoring system
- Laboratory investigations and system calibration
- Software development for autonomous data acquisition and evaluation
- Successful installation and measurements on-site along three different grouted anchors with lengths up to 25 m
- Data evaluation and analysis

Clients/Funders Keller Grundbau Ges.m.b.H (Austria)

Realizations 11/2014 Söding (Austria)
07/2015 Aliaga (Turkey)

02/2015 – ongoing Assessment of the distributed deformation behavior of pre-cast tunnel segments using distributed fiber optic sensing

Position and Responsibilities *Project Leader/Manager*

- Contract and compliance management
- Design and development of patented fiber optic sensing approach to assess distributed in-situ deformations along pre-cast tunnel lining segments
- Detailed laboratory investigations and system calibration
- Software development for autonomous data acquisition and evaluation
- Successful implementation of the DFOS system into 21 tunnel segments
- Continuous measurements of 8 segments under controlled load at an especially developed test rig
- Installation of two complete lining rings inside a railway tunnel under construction and autonomous monitoring over several weeks
- Data evaluation and analysis

Clients/Funders OEBB - Austrian Federal Railways, Austria
Brenner Base Tunnel SE, Austria

Realizations

09/2015	Niklasdorf (Austria)
02/2016	Niklasdorf (Austria)
12/2016	Niklasdorf (Austria)
04/2018	Koralmtunnel (Austria)
12/2018	Niklasdorf (Austria)
09/2019	Koralmtunnel (Austria)
07/2023	Brenner Base Tunnel (Austria)

11/2014 – ongoing Distributed fiber optic sensing along driven ductile piles to assess distributed strain and curvature profiles

Position and Responsibilities *Project Leader*

- Design and development of DFOS monitoring system
- Laboratory investigations and system calibration
- Software development for autonomous data acquisition and evaluation
- Successful installation along 10 different driven piles with lengths up to 25m
- Continuous measurements during compression and pull-out tests
- Autonomous monitoring over weeks to assess changes of bearing loads
- Data evaluation and analysis

Clients/Funders Keller Grundbau Ges.m.b.H, Austria

Realizations

11/2014	Bruck/Leitha (Austria)
07/2015	Ansfelden (Austria)
09/2015	Klagenfurt (Austria)
02/2018	Hollern (Austria)
08/2019	Ravensburg (Germany)
10/2019	Vienna (Austria)
05/2020	Ravensburg (Germany)
09/2020	Sattledt (Austria)
12/2020	Linz (Austria)
01/2021	Vienna (Austria)
02/2021	Schandorf (Austria)
03/2021	Wolkersdorf (Austria)
05/2021	Vienna (Austria)
06/2021	Liezen (Austria)
07/2021	Greifenburg (Austria)
07/2021	Neumarkt in Südtirol (Italy)
04/2022	Leobendorf (Austria)
10/2022	Treviso (Italy)
11/2022	Himberg bei Wien (Austria)
05/2023	Přerov (Czech Republic)

09/2013 – 03/2022 Monitoring of segment joint movements inside a hydro power dam using fiber Bragg gratings (FBG)

Position and Responsibilities *Technical Expert*

- Sensor Installation inside the water dam
- Software development for data acquisition and evaluation
- Continuous and epochwise measurements
- Data evaluation and analysis

Clients/Funders Vorarlberger Illwerke AG, Austria

Realizations 09/2013 Kops (Austria)

V. Patents

[PA2] M. Kwapisz, A. Vorwagner, W. Lienhart, **C. Monsberger**, M. Winkler (2019) *Method for Detecting the maximum Expansion of Cracks in an object*, WO 2021/035265 (A1): 33 pages

[PA1] W. Lienhart, **C. Monsberger**, M. Friessnig (2018) *Apparatus and Method for Additive Manufacturing*, EP3511155 (A1): 42 pages

VI. Publications

[P39] **C.M. Monsberger**, F. Buchmayer, W. Lienhart (2023) *Distributed Fiber Optic Monitoring Systems in Tunneling: Implementation from research into practice.* Proc. ISRM 15th International Congress on Rock Mechanics and Rock Engineering & 72nd Geomechanics Colloquium – Challenges in Rock Mechanics and Rock Engineering, Salzburg, Austria: 1501-1506

[P38] **C.M. Monsberger**, W. Lienhart (2022) *Long-term structural integrity monitoring of inner tunnel linings using distributed fiber optic sensing.* Proc. 11th International Conference on Structural Health Monitoring of Intelligent Infrastructure - SHMII-11, Montreal, QC, Canada: 4p

[P37] M. Hayden, J. Chalmovsky, T. Kirchmayer, **C. Monsberger**, H. Neumann, V. Racanský (2022) *Neueste Entwicklungen der Qualitätssicherung bei der Duktilpfahlherstellung.* 13. Österreichische Geotechniktagung (OEGT), Vienna, Austria: 19p

[P36] **C.M. Monsberger**, P. Bauer, F. Buchmayer, W. Lienhart (2021) *Large-scale distributed fiber optic sensing network for short and long-term integrity monitoring of tunnel linings.* Journal of Civil Structural Health Monitoring; doi: 10.1007/s13349-022-00560-w

[P35] W. Lienhart, **C.M. Monsberger**, F. Buchmayer (2021) *Verteilte faseroptische Sensorik zur Detektion, Lokalisation, Identifikation und Quantifikation von Deformationsereignissen.* Allgemeine Vermessungs-Nachrichten 128 (5): 248-255

[P34] A. Vorwagner, M. Kwapisz, W. Lienhart, M. Winkler, **C.M. Monsberger**, D. Prammer (2020) *Verteilte Rissbreitenmessung im Betonbau mittels faseroptischer Sensorik – Neue Anwendung von verteilten faseroptischen Messsystemen.* Beton- und Stahlbetonbau 116: 727-740; doi: 10.1002/best.202100060

[P33] **C.M. Monsberger**, W. Lienhart (2021) *Distributed Fiber Optic Shape Sensing of Concrete Structures.* Sensors: 337-350; doi: 10.3390/s21186098

[P32] **C.M. Monsberger**, F. Buchmayer, W. Lienhart (2021) *Autonomous Integrity Monitoring of Shotcrete Tunnel Linings using Distributed Fiber Optic Sensing.* Proc. 10th International Conference on Structural Health Monitoring of Intelligent Infrastructure - SHMII-10, Porto, Portugal (Online Event): 7p

[P31] F. Buchmayer, **C.M. Monsberger**, W. Lienhart (2021) *Distributed fibre optic sensing for long-term monitoring of tunnel inner linings in anhydrite.* 8th Civil Structural Health Monitoring Workshop (CSHM-8), Naples, Italy (Online-Event): 13p

[P30] **C.M. Monsberger**, W. Lienhart (2021) *Distributed fiber optic shape sensing along shotcrete tunnel linings: Methodology, field applications, and monitoring results.* Journal of Civil Structural Health Monitoring 11: 337-350; doi: 10.1007/s13349-020-00455-8

[P29] F. Buchmayer, **C.M. Monsberger**, W. Lienhart (2021) *Advantages of tunnel monitoring using distributed fibre optic sensing.* Journal of Applied Geodesy 15(1): 1-12; doi: 10.1515/jag-2019-0065

[P28] A. Vorwagner, M. Kwapisz, D. Prammer, W. Lienhart, **C.M. Monsberger**, M. Winkler, U. Grunicke (2020) *Neue Möglichkeiten zur Rissweitenbestimmung an bestehenden Beton-konstruktionen mittels verteilter optischer Fasermessungen.* Proc. 4th Brückenkolloquium, Esslingen, Germany: 323-329

[P27] W. Lienhart, F. Buchmayer, F. Klug, **C.M. Monsberger** (2020) *Distributed Fiber Optic Sensing on a Large Tunnel Construction Site: Increased Safety, More Efficient Construction and Basis for Condition-Based Maintenance.* Proceedings of the Institution of Civil Engineers – Smart Infrastructure and Construction 172 (4): 148-159; doi: 10.1680/jsmic.20.00006

[P26] **C.M. Monsberger**, W. Lienhart, M. Hayden (2020) *Distributed fiber optic sensing along driven ductile piles: Design, sensor installation and monitoring benefits.* Journal of Civil Structural Health Monitoring 10 (4): 627-637; doi: 10.1007/s13349-020-00406-3

[P25] **C.M. Monsberger**, W. Lienhart, A. Kluckner, W. Schubert (2019) *In-situ assessment of distributed strain and curvature characteristics in shotcrete tunnel linings based on fiber optic strain sensing.* Rock Mechanics for Natural Resources and Infrastructure Development. Proc. Earth and Geosciences, 14th International Congress on Rock Mechanics and Rock Engineering - ISRM, Foz do Iguassu, Brazil: 1324-1331; doi: 10.1201/9780367823184

[P24] **C.M. Monsberger**, W. Lienhart (2019) *In-situ Assessment of Curvature and Bending Characteristics Along Geotechnical Structures Using Distributed Fiber Optic Sensors.* Proc. 12th International Workshop on Structural Health Monitoring 2019: Enabling Intelligent Life-cycle Health Management for Industry Internet of Things (IIOT) - IWSHM, Stanford, USA: 1715-1723; doi: 10.12783/shm2019/32294

[P23] M. Winkler, **C.M. Monsberger**, W. Lienhart, A. Vorwagner, M. Kwapisz (2019) *Assessment of crack patterns along plain concrete tunnel linings using distributed fiber optic sensing.* Proc. 5th International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures 2019 - SMAR, Potsdam, Germany: 8p

[P22] L. Wagner, A. Kluckner, **C.M. Monsberger**, P. Wolf, K. Prall, W. Schubert, W. Lienhart (2019) *Direct and Distributed Strain Measurements Inside a Shotcrete Lining: Concept and Realisation.* Rock Mechanics and Rock Engineering 53: 641–652; doi:10.1007/s00603-019-01923-4

[P21] **C. Monsberger**, M. Winkler, H. Woschitz, W. Lienhart, M. Hayden (2019) *5 years' experience using distributed fiber optic sensing along ductile driven piles.* Proc. 9th International Conference on Structural Health Monitoring of Intelligent Infrastructure - SHMII-9, St. Louis, USA: 1065-1070

[P20] W. Lienhart, F. Buchmayer, F. Klug, **C.M. Monsberger** (2019) *Distributed Fiber Optic Sensing on a Large Tunnel Construction Site: Increased Safety, More Efficient Construction and Basis for Condition-Based Maintenance.* Proc. International Conference on Smart Infrastructure and Construction 2019 - ICSIC, Cambridge, United Kingdom: 595-604; doi: 10.1680/icsic.64669.595

[P19] F. Buchmayer, **C.M. Monsberger**, W. Lienhart (2019) *Benefits of strain and temperature monitoring of conventional tunnel cross sections using distributed fibre opic sensors.* Proc. 4th Joint International Symposium on Deformation Monitoring - JISDM, Athens, Greece: 7p

[P18] **C.M. Monsberger**, W. Lienhart (2019) *Design, Testing, and Realization of a Distributed Fiber Optic Monitoring System to Assess Bending Characteristics Along Grouted Anchors* Journal of Lightwave Technology 37 (16): 4603-4609 doi:10.1109/JLT.2019.2913907

[P17] **C.M. Monsberger**, W. Lienhart, B. Moritz (2018) *In-situ assessment of strain behaviour inside tunnel linings using distributed fibre optic sensors.* Geomechanics and Tunnelling 11 (6): 701-709; doi:10.1002/geot.201800050

[P16] W. Lienhart, **C.M. Monsberger**, S. Kalenjuk, H. Woschitz (2018) *High Resolution Monitoring of Retaining Walls with Distributed Fibre Optic Sensors and Mobile Mapping Systems.* Proc. 7th Asia-Pacific Workshop on Structural Health Monitoring – APWSHM-7, Hongkong, China: 88-96

[P15] **C.M. Monsberger**, W. Lienhart, P. Caporossi (2018) *Distributed Fiber Optic Sensing along Grouted Anchors to Assess Curvature and Bending Characteristics.* Proc. 26th International Conference on Optical Fiber Sensors OFS-26, Lausanne, Switzerland: TuE98, 4p; doi: 10.1364/OFS.2018.TuE98

[P14] C. Betschoga, **C.M. Monsberger** (2018) *Bestimmung des Kraftflusses anhand verfeinerter Messmethoden bei Querkraftversuchen an Stahlbetonbalken.* Proc. 4. GRAZER BETONKOLLOQUIUM, Graz, Austria: 8p

[P13] **C.M. Monsberger**, W. Lienhart, A. Kluckner, L. Wagner, W. Schubert (2018) *Continuous strain measurements in a shotcrete tunnel lining using distributed fibre optic sensing.* Proc. 9th European Workshop on Structural Health Monitoring – EWSHM-9, Manchester, United Kingdom: 13p

[P12] **C. Monsberger**, W. Lienhart, S. Hirschmüller, R. Marte (2018) *Monitoring of soil nailed slope stabilizations using distributed fiber optic sensing.* Proc. SPIE 10598, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2018, 1059835, Denver, USA: 12p; doi: 10.1117/12.2296674

[P11] **C. Monsberger**, W. Lienhart (2017) *In-situ Deformation Monitoring of Tunnel Segments using High-resolution Distributed Fibre Optic Sensing.* Proc. 8th International Conference on Structural Health Monitoring of Intelligent Infrastructure – SHMII-8, Brisbane, Australia: RS1-9, 12p

[P10] W. Lienhart, **C. Monsberger**, S. Kalenjuk (2017) *Linien- und flächenhaftes Strukturmonitoring mit geodätischen und geotechnischen Sensoren.* Proc. Messen im Bauwesen 2017, Bundesanstalt für Materialforschung und –prüfung (BAM), Berlin, Germany: 65-76

[P9] **C. Monsberger**, H. Woschitz, W. Lienhart, V. Racanský, D. Gächter, R. Kulmer (2017) *Überwachung von Ankerausziehversuchen im Rahmen der Hangsicherung für den Neubau einer Raffinerie.* Proc. 32nd Christian Veder Kolloquium 'Zugelemente in der Geotechnik', TU Graz, Gruppe Geotechnik 58: 173-192

[P8] **C. Monsberger**, F. Klug, W. Lienhart (2017) *Performance assessment of a fiber Bragg grating sensor network inside a hydro power dam using optical backscatter.* Proc. SPIE 10208, Fiber Optic Sensors and Applications XIV, 102080R, Anaheim, USA: 12p; doi:10.1117/12.2262410

[P7] **C. Monsberger**, H. Woschitz, W. Lienhart, M. Hayden, V. Racanský (2017) *Performance assessment of geotechnical structural elements using distributed fiber optic sensing.* Proc. SPIE 10168, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2017, 101680Z, Portland, USA: 13p; doi:10.1117/12.2256711

[P6] V. Racanský, W. Lienhart, **C. Monsberger**, H. Woschitz, J. Chalmovsky (2016) *Ground Anchor Monitoring with Fiber Optic Sensing.* Proc. 44. Conference on Foundation Engineering, Brno, Czech Republic: 6p

[P5] V. Racanský, R. Weidacher, W. Lienhart, **C. Monsberger**, H. Woschitz, H.F. Schweiger (2016) *Überwachung eines Ankerausziehversuches mittels Glasfasersensoren.* Proc. 34. Deutsche Baugrundtagung, Deutsche Gesellschaft für Geotechnik e.V., Bielefeld, Germany: 315-322

[P4] P. Gehwolf, **C. Monsberger**, S. Barwart, R. Wenighofer, R. Galler, W. Lienhart, M. Haberler-Weber, B. Moritz, C. Barwart, A. Lange (2016) *Deformation measurements of tunnel segments at a newly developed test rig.* Geomechanics and Tunnelling 9 (3): 180-187; doi: 10.1002/geot.201600012

[P3] H. Woschitz, **C. Monsberger**, M. Hayden (2016) *Distributed fibre optic strain measurements on a driven pile.* Proc. Sixth European Workshop on Optical Fibre Sensors, SPIE Vol. 9916, Limerick, Ireland: 5p; doi: 10.1117/12.2236986

[P2] **C. Monsberger**, H. Woschitz, M. Hayden (2016) *Deformation measurement of a driven pile using distributed fibre-optic sensing.* Journal of Applied Geodesy 10(1): 61-69; doi: 10.1515/jag-2015-0021

[P1] **C. Monsberger**, H. Woschitz, M. Hayden, W. Lienhart (2016) *Faseroptische Instrumentierung und Deformationsmessung eines duktilen Rammpfahls.* Proc. Messen in der Geotechnik 2016. Stahlmann, J. (Hrsg.). Braunschweig: Institut für Grundbau und Bodenmechanik, TU Braunschweig, Band 101: 195-216

VII. Presentations

[T17] 12.10.2023, *Distributed Fiber Optic Monitoring Systems in Tunneling: Implementation from research into practice.* 15th International Congress on Rock Mechanics and Rock Engineering & 72nd Geomechanics Colloquium, Salzburg, Austria

[T16] 01.07.2021, *Autonomous Integrity Monitoring of Shotcrete Tunnel Linings using Distributed Fiber Optic Sensing.* 10th International Conference on Structural Health Monitoring of Intelligent Infrastructure - SHMII-10, Porto, Portugal (Online Event)

[T15] 21.11.2019, *Distributed Fiber Optic Sensing in Tunneling: Concepts, Realizations and Monitoring Benefits.* PULSe EPIC Meeting on Structural Monitoring at Smart City Expo, Barcelona, Spain

[T14] 18.09.2019, *In-situ assessment of distributed strain and curvature characteristics in shotcrete tunnel linings based on fiber optic strain sensing.* 14th International Congress on Rock Mechanics and Rock Engineering - ISRM, Foz do Iguassu, Brazil

[T13] 10.09.2019, *In-situ Assessment of Curvature and Bending Characteristics Along Geotechnical Structures Using Distributed Fiber Optic Sensors.* 12th International Workshop on Structural Health Monitoring 2019 - IWSHM, Stanford, California, USA

[T12] 06.08.2019*, 5 years' experience using distributed fiber optic sensing along ductile driven piles*. 9th International Conference on Structural Health Monitoring of Intelligent Infrastructure - SHMII-9, St. Louis, Missouri, USA

[T11] 10.10.2018, *In-situ assessment of strain behaviour inside tunnel linings using distributed fibre optic sensors.* 11th Austrian Tunnel Day, Salzburg, Austria

[T10] 11.09.2018, *Distributed Fiber Optic Shape Sensing in Soil and Rock Mechanics: Principles & Applications.* 7. Doktorandenseminar der DGK Sektion "Ingenieurgeodäsie", Berlin, Germany

[T9] 12.07.2018, *Continuous strain measurements in a shotcrete tunnel lining using distributed fibre optic sensing*. 9th European Workshop on Structural Health Monitoring – EWSHM-9, Manchester, United Kingdom

[T8] 08.03.2018, *Monitoring of soil nailed slope stabilizations using distributed fiber optic sensing*. SPIE 10598, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2018, Denver, Colorado, USA

[T7] 16.01.2018, In-situ Deformationsanalyse im Tunnelbau mittels verteilter faseroptischer Messsysteme. Leica Geosystems & rmData Tour 2018, Vienna, Austria – **invited presentation**

[T6] 08.12.2017, *In-situ Deformation Monitoring of Tunnel Segments using High-resolution Distributed Fibre Optic Sensing.* 8th International Conference on Structural Health Monitoring of Intelligent Infrastructure – SHMII-8, Brisbane, Australia

[T5] 12.04.2017, *Performance assessment of a fiber Bragg grating sensor network inside a hydro power dam using optical backscatter.* SPIE 10208, Fiber Optic Sensors and Applications XIV, Anaheim, California, USA

[T4] 28.03.2017, *Performance assessment of geotechnical structural elements using distributed fiber optic sensing.* SPIE 10168, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2017, Portland, Oregon, USA

[T3] 16.09.2016, *Überwachung eines Ankerausziehversuches mittels Glasfasersensoren.* 34. Deutsche Baugrundtagung, Bielefeld, Germany.

[T2] 30.03.2016, *Deformation measurement of a driven pile using distributed fibre-optic sensing.* 4th Joint International Symposium on Deformation Monitoring - JISDM, Vienna, Austria

[T1] 18.03.2016, *Faseroptische Instrumentierung und Deformationsmessung eines duktilen Rammpfahls.* Messen in der Geotechnik 2016, Braunschweig Germany

VIII. Awards

2021 ***Best Paper Award*** at the 10th International Conference on Structural Health Monitoring of Intelligent Infrastructure - SHMII-10, Porto, Portugal for the article *Autonomous Integrity Monitoring of Shotcrete Tunnel Linings using Distributed Fiber Optic Sensing.*

2019 ***Best Paper Award*** at the International Conference on Smart Infrastructure and Construction, (ICSIC), Cambridge, UK for the article *Distributed Fibre Optic Sensing on a Large Tunnel Constructions Site: Increased Safety, More Efficient Construction and Basis for Condition-Based Maintenance.*

2018 **Heinrich Wild Preis 2017** for “Excellent Research in the field of Engineering Geodesy” with the project: In-situ Deformation Analysis In Tunneling using Distributed Fiber Optic Sensing Systems

2015 **Houska Award 2015, Finalist** with the project: High Sensitive Monitoring of Water Dams in Pump-Storage Operation

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