Curriculum Vitae

Personal Information	
Surname / First name	Umili Gessica
ORCID	orcid.org/0000-0002-2448-6020
Education	
University	Università degli Studi di Parma (Italy)
Date	15th March 2006
Degree	Bachelor's Degree in Environmental Engineering
Final grade	102/110
Title of thesis	Excavating methods for tunnels in rock
Tutor	Anna Maria Ferrero
University	Università degli Studi di Parma (Italy)
Date	10th October 2008
Degree	Master's Degree in Environmental Engineering
Final grade	110/110
Title of thesis	Theoretical and experimental study of stability conditions of rock slopes subject to climatic change: the case of Aiguille du Marbrée
Tutor	Anna Maria Ferrero
University	Università degli Studi di Parma (Italy)
Date	27th April 2012
Degree	Doctorate Degree in Civil Engineering – curriculum Geomatics
Tutor	Gianfranco Forlani
Title of thesis	Automatic reconstruction of breaklines in Digital Surface Models, applied to geotechnics and architecture

Curriculum Vitae

Certifications	
Date	28th April 2009
Certificate	Engineer License
Date	4th April 2018
Certificate	National Academic Qualification as Associate Professor of Geotechnics (S.C. 08/B1)
Expiry date	4th April 2024
Experiences	
Period	**28th December 2018 - today**
Position	Researcher
University	Università degli Studi di Torino (Italy)
Field of research	Rock Mechanics - Geotechnics
Period	**1st July 2018 – 27th December 2018**
Position	Researcher
University	Politecnico di Torino (Italy)
Field of research	Rock Mechanics – Mining Engineering
Period	**1st June 2014 – 30th June 2017**
Position	Postdoctoral fellow at the Department of Earth Science
University	Università degli Studi di Torino (Italy)
Field of research	Geotechnics
Tutor	Anna Maria Ferrero
Period	**16th May 2012 - 15th May 2014**
Position	Postdoctoral fellow at the Department of Civil and Environmental Engineering and Architecture
University	Università degli Studi di Parma (Italy)
Field of research	Geotechnics
Tutor	Andrea Segalini

Period	**1st June 2011 – 31st August 2011**
Position	PhD visiting student
University	Massachusetts Institute of Technology (Cambridge, MA, USA)
Tutor	Herbert H. Einstein
Field of research	Automatic identification and extraction of discontinuity traces on rock mass Digital Surface Models; implementation of automatic traces sampling methods to estimate parameters.
Period	**21st November 2011 – 2nd December 2011**
Position	Student at the International Course for PhD students LARAM Asia 2011 "Landslide risk assessment and management in Asia"
University	State Key Laboratory on Geohazards Prevention (SKLGP), Chengdu University of Technology (China).

Professional courses

Period	October and November 2013
Title	The design of geotechnical structures in seismic conditions
Duration	5 days - 40 hours

Main Research Projects

Host Institution	Università degli Studi di Torino
Coordinator	Gessica Umili
title of the project	Semi-Automatic DEM-based approach to detect geological Lineaments for natural hazards MONitoring, structural study and hydrogeological researches (SALMON)
starting date	3rd March 2017
duration	3 years – (ended)

Host Institution	Università degli Studi di Torino
Coordinator	Anna Maria Ferrero
title of the project	"MINERAL" (ModernIsation of GeoLogy Education in Russian and VietNAmese Universities)
starting date	1st February 2017
duration	36 months – (ended)

Host Institution	Università degli Studi di Torino
Coordinator	Prof. Sergio Carmelo Vinciguerra
title of the project	"Detecting Slow Deformation Signals Preceding Dynamic Failure: A New Strategy For The Mitigation Of Natural Hazards", acronym 'SAFER'
starting date	1st March 2013
duration	3 years (ended)

Teaching Experience

Slope Stability, exercises (since 2012)

Principles of Geotechnics, exercises (since 2018)

Geotechnical Works, exercises (since 2020)

Hydrogeological Risk, module "landslide risk" (since 2020)

Introduction to programming in Matlab (course for PhD students, since 2018)

Rock mass survey: techniques and data analysis (course for PhD students, since 2018)

Products of research

Doctoral Thesis

Umili, G. (2012). Ricostruzione automatica delle linee di rottura nei Modelli Digitali di Superficie con applicazioni in ambito geotecnico e architettonico. Tesi di Dottorato, Università di Parma, 127 pp., in Italian. http://hdl.handle.net/1889/1883 Tutor Prof. Gianfranco Forlani.

Journals

Bonetto, S.M.R., Vagnon, F., Umili, G., Vianello, D., Migliazza, M.R., Ferrero, A.M. (2021). The contribution of remotely sensed data to the stress state evaluation in underground marble quarries. Egyptian Journal of Remote Sensing and Space Science, 24 (1), pp. 1-13. doi: 10.1016/j.ejrs.2020.12.008

Vagnon, F., Dino, G.A., Umili, G., Cardu, M., Ferrero, A.M. (2020). New developments for the sustainable exploitation of ornamental stone in carrara basin. Sustainability, 12(22), pp. 1–23, 9374. doi: 10.3390/su12229374

Vagnon F., Bonetto S., Ferrero A.M., Harrison J.P., Umili G. (2020). Eurocode 7 and Rock Engineering Design: The Case of Rockfall Protection Barriers. Geosciences 10(8), 305. doi:10.3390/geosciences10080305

Zeighami Moghaddam M., Umili G., Messina V., Bonetto S., Ferrero A.M., Bollini G., Gandreau D. (2020). An SVM-Based Scheme for Automatic Identification of Architectural Line Features and Cracks. Applied Sciences 10(15), 5077. doi:10.3390/app10155077

Umili G., Bonetto S., Mosca P., Vagnon F., Ferrero A.M. (2020). In Situ Block Size Distribution Aimed at the Choice of the Design Block for Rockfall Barriers Design: A Case Study along Gardesana Road. Geosciences 10(6), 223. doi: 10.3390/geosciences10060223

Bonetto S., Umili G., Ferrero A.M., Carosi R., Simonetti M., Biasi A., Migliazza M.R., Bianchini S. (2020). Geostructural and Geomechanical Study of the Piastrone Quarry (Seravezza, Italy) Supported by Photogrammetry to Assess Failure Mode. Geosciences. 10(2), 64. doi: 10.3390/geosciences10020064

Bonetto S., Facello A., Umili G. (2020). The contribution of CurvaTool semi-automatic approach in structural and groundwater investigations. A case study in the Main Ethiopian Rift Valley. Egyptian Journal of Remote Sensing and Space Sciences. 23(1): 97-111. doi: 10.1016/j.ejrs.2018.10.003

Ferrero A.M., Migliazza M.R., Umili G. (2019). Comparison of methods for discontinuity roughness evaluation. Rivista Italiana di Geotecnica. 3: 5-15. doi: 10.19199/2019.3.0557-1405.005

Costantini G., Comina C., Ferrero A.M., Umili G., Bonetto S. (2019). Applicazione in sotterraneo di tecniche fotografiche e GPR per il rilievo di discontinuità. Rivista Italiana di Geotecnica. 2: 37-47. doi: 10.19199/2019.2.0557-1405.037

Caselle C., Umili G., Bonetto S., Ferrero A.M. (2019). Application of DIC analysis method to the study of failure initiation in gypsum rocks. Geotechnique Letters 9(1): 35-45. doi:10.1680/jgele.18.00156

Umili G., Bonetto S., Ferrero A.M. (2018). An integrated multiscale approach for characterization of rock masses subjected to tunnel excavation. Journal of Rock Mechanics and Geotechnical Engineering. 10(3): 513-522. doi: 10.1016/j.jrmge.2018.01.007

Vagnon F., Ferrero A.M., Umili G., Segalini A. (2017). A Factor Strength Approach for the Design of Rock Fall and Debris Flow Barriers. Geotechnical and Geological Engineering 35(6): 2663-2675. doi:10.1007/s10706-017-0269-x

Bonetto S., Facello A., Umili G. (2017). A new application of CurvaTool semi-automatic approach to qualitatively detect geological lineaments. Environmental and Engineering Geoscience 23(3): 179-190. doi: 10.2113/EEG-1863

Ferrero A.M., Migliazza M.R., Pirulli M., Umili G. (2016). Some open issues on rock fall hazard analysis in fractured rock mass: problems and prospects. Rock Mechanics and Rock Engineering 49 (9): 3615-3629. doi: 10.1007/s00603-016-1004-2

Colombero C., Comina C., Umili G., Vinciguerra S. (2016). Multiscale geophysical characterization of an unstable rock mass. Tectonophysics 675: 275-289. doi: 10.1016/j.tecto.2016.02.045 *(SJR: Q1)*

Racaniello A., Bonetto S., Enrici Baion R., Ferrero A.M., Umili G. (2015). Caratterizzazione di ammassi rocciosi in sotterraneo mediante rilievo geostrutturale "non a contatto". Geoingegneria Ambientale e Mineraria, Anno LII, n. 2: 51-58 (in Italian). *(SJR: Q3)*

Armillotta P., Pastarini B., Segalini A., Umili G. (2015). Application of Low Potential Electric Fields for Improving Slope Stability. Procedia Earth and Planetary Science 15: 173-180, doi: 10.1016/j.proeps.2015.08.042 *(SJR not available)*

Ferrero A.M., Segalini A., Umili G. (2015). Experimental tests for the application of an analytical model for flexible debris flow barriers design. Engineering Geology, vol. 185, p. 33-42. doi: 10.1016/j.enggeo.2014.12.002 *(SJR: Q1)*

Bonetto S., Facello A., Ferrero A.M., Umili G. (2015). A Tool for Semi-Automatic Linear Feature Detection Based on DTM. Computers & Geosciences, vol. 75, p. 1-12. doi: 10.1016/j.cageo.2014.10.005 *(SJR: Q1)*

Curtaz M., Ferrero A.M., Roncella R., Segalini A., Umili G. (2014). Terrestrial photogrammetry and numerical modelling for the stability analysis of rock slopes in high mountain areas: Aiguilles Marbrées case. Rock Mechanics and Rock Engineering 47 (2): 605 – 620. doi: 10.1007/s00603-013-0446-z *(SJR: Q1)*

Umili G. (2013). Ricostruzione automatica delle linee di rottura nei Modelli Digitali di Superficie con applicazioni in ambito Geotecnico, Geomorfologico e Architettonico. Bollettino della Società Italiana di Fotogrammetria e Topografia, vol. 2, pp. 91-113. ISSN: 1721-971X *(SJR not available)*

Umili G., Ferrero A.M., Einstein H.H. (2013). A new method for automatic discontinuity traces sampling on rock mass 3D model. Computers & Geosciences 51 (2013): 182–192. doi: 10.1016/j.cageo.2012.07.026 *(SJR: Q2)*

Roncella R., Umili G., Forlani G. (2012). A novel image acquisition and processing procedure for fast Tunnel DSM production. International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XXXIX-B5, pp. 297-302, ISSN: 1682-1777. *(SJR not available)*

Ferrero A.M., Umili G. (2011). Comparison of Methods for Estimating Fracture Size and Intensity: Aiguille du Marbrée (Mont Blanc). International Journal of Rock Mechanics and Mining Sciences 48 (2011): 1262-1270. doi: 10.1016/j.ijrmms.2011.09.011 *(SJR: Q1)*

Book chapters

Caselle C., Umili G., Bonetto S., Costanzo D., Ferrero A. M. (2020). Evolution of Local Strains Under Uniaxial Compression in an Anisotropic Gypsum Sample. In: Lecture Notes in Civil Engineering, vol. 40, p. 454-461, Springer, Berlin. doi: 10.1007/978-3-030-21359-6_48

Vagnon F., Bonetto S.M.R., Ferrero A.M., Migliazza M., Umili G. (2020). Rock-Engineering Design and NTC2018: Some Open Questions. In: Lecture Notes in Civil Engineering, vol. 40, p. 519-528, Springer, Berlin. doi: 10.1007/978-3-030-21359-6_55

Bonetto S., Ferrero A.M., Migliazza M.R., Umili G. (2017). Sviluppo di metodologie innovative per la caratterizzazione dell'ammasso roccioso interessato dallo scavo di gallerie: Brennero e Terzo Valico. XVI Ciclo di Conferenze di Meccanica e Ingegneria delle Rocce "Innovazioni nella progettazione realizzazione e gestione delle opere in sotterraneo". Torino 16-17 Gennaio 2017, p. 9-32. ISBN 978-88-6789-079-8.

Bonetto S., Facello A., Ferrero A.M., Umili G. (2015). A Tool for Semi-Automatic Geostructural Survey Based on DTM. In Lollino et al., Engineering Geology for Society and Territory. vol. 6, p. 709-713, Springer, Torino, 2015, doi: 10.1007/978-3-319-09060-3_127

Colombero C., Comina C., Ferrero A.M., Mandrone G., Umili G. and Vinciguerra S. (2015). An integrated approach for monitoring slow deformations preceding dynamic failure in rock slopes: a preliminary study. In Lollino et al., Engineering Geology for Society and Territory. vol. 6, p. 699-703, Springer, Torino, 2015, doi: 10.1007/978-3-319-09060-3_125

Brighenti R., Ferrero A.M., Segalini A., Umili G. (2015). Study on the mechanical behaviour of flexible barriers by in situ testing and numerical modelling. In Lollino et al., Engineering Geology for Society and Territory. vol. 2, p. 1651-1655, Springer, Torino, 2015, doi: 10.1007/978-3-319-09057-3_293

Segalini A., Brighenti R., Umili G. (2014). A simplified analytical model for the design of flexible barriers against debris flows. Landslide Science for a Safer Geoenvironment. Volume 2: Methods of Landslide Studies, pp 725-730, ISBN 978-3-319-05049-2, doi: 10.1007/978-3-319-05050-8_112

Ferrero A.M., Migliazza M.R., Umili G. (2012). Innovazione nei rilievi geostrutturali. XIV Ciclo di Conferenze di Meccanica e Ingegneria delle Rocce "Nuovi metodi di indagine, monitoraggio e modellazione degli ammassi rocciosi". Torino 21-22 Novembre 2012, p. 67-87. ISBN 978-88-7661-985-4.

Umili G (2012). Automatic Reconstruction of Breaklines in Digital Surface Models applied to Geotechnics and Architecture. In: Ricerche di Geomatica 2012. p. 79-88, Bologna: Gabriele Bitelli, ISBN: 978-88-905917-1-6

Proceedings

Vagnon, F., Bonetto, S.M.R., Caselle, C., Ferrero, A.M., Umili, G., Vianello, D., Migliazza, M.R. (2020). A comprehensive study on natural and induced stress state in large underground marble quarry. ISRM International Symposium - EUROCK 2020. 14 - 19 June, Trondheim, Norway; Virtual.

Vagnon F., Harrison J.P., Ferrero A.M., Umili G. (2018). Reliability based design for rock fall barriers. Proceedings of EUROCK2018 - Geomechanics and Geodynamics of Rock Masses, vol. 2, p. 1543-1548. London: Taylor and Francis Group, ISBN: 978-1138-6164-5-5. 22-27 May, Saint Petersburg, Russia.

Umili G., Bonetto S., Ferrero A.M., Migliazza M.R. (2018). An innovative multiscale approach for the characterization of rock masses subject to tunnel excavation. Proceedings of First International Conference on Advances in Rock Mechanics, pp. 201-206. 29-31 March 2018, Hammamet, Tunisia. ISBN: 978-9973-0929-0-8.

Ferrero A.M., Umili G., Vagnon F. (2016). Analysis of discontinuity data obtained with remote sensing tools to generate input for EC7 design. In Ulusay, Aydan, Gerçek, Mehmet Hindistan and Tuncay (eds). Proceedings of EUROCK 2016 - ISRM International Symposium - Rock Mechanics and Rock Engineering: From the Past to the Future. 29-31 August, Cappadocia, Turkey.In Eurock 2016. Taylor & Francis Group, p. 1115–1119.

Ferrero A.M., Filipello A., Mandrone G., Umili G., Vagnon F. (2016). Slope stability analysis of La Marogna slope: combined survey and modeling approaches for a global assessment of past and future events. In: Proceedings of the 12th International Symposium on Landslides: Landslides and Engineered Slopes. Experience, Theory and Practice, June 12th-19th, Napoli, Italy. pp. 901-908. doi: 10.1201/b21520-106

Ferrero A.M., Migliazza M.R., Umili G. (2015). Some open issues on the design of protection barriers against rockfall. 49th US Rock Mechanics / Geomechanics Symposium, San Francisco, CA, USA, 28 June- 1 July 2015.

Vinciguerra S., Colombero C., Comina C., Ferrero A.M., Mandrone G., Umili G., Fiaschi A., Saccorotti G. (2014). Detecting slow deformation signals preceding dynamic failure: a new strategy for the mitigation of natural hazards (SAFER). In: Geophysical Research Abstracts, vol. 16. European Geosciences Union General Assembly, 27th April - 2nd May 2014 Vienna, Austria.

Umili G., Ferrero A.M., Migliazza M.R. (2014). Metodo Speditivo Per Il Rilievo Geostrutturale Non A Contatto In Sotterraneo. In: Atti dell'Incontro Annuale dei Ricercatori di Geotecnica IARG 2014. Chieti e Pescara, 14-16 Luglio 2014.

Ferrero A.M., Migliazza M.R., Umili G. (2014). Rock mass characterization by means of advanced survey methods. Keynote lecture. Rock Engineering and Rock Mechanics: Structures in and on Rock Masses - Proceedings of EUROCK 2014, ISRM European Regional Symposium, Vigo, Spain, 27-29 May 2014, pp. 17-27, ISBN 978-1-138-00149-7.

Migliazza M.R., Ferrero A.M., Segalini A., Umili G. (2014). Critical review of Eurocode-7 regarding monitoring rock masses by field instrumentation: devices and data analysis. Rock Engineering and Rock Mechanics: Structures in and on Rock Masses - Proceedings of EUROCK 2014, ISRM European Regional Symposium, Vigo, Spain, 27-29 May 2014, pp. 1481-1486, ISBN 978-1-138-00149-7.

Bonetto S., Facello A., Umili G. (2014). A Tool for Semi-Automatic Geostructural Survey Based on DTM – a Case Study from NW Italy. Rock Engineering and Rock Mechanics: Structures in and on Rock Masses - Proceedings of EUROCK 2014, ISRM European Regional Symposium, Vigo, Spain, 27-29 May 2014, pp. 405-410, ISBN 978-1-138-00149-7.

Segalini A., Brighenti R., Ferrero A.M., Umili G. (2013). Comparison between the mechanical behavior of barriers against rock fall vs debris flows. In: Rock Mechanics for Resources, Energy and Environment. Proceedings of EUROCK 2013 - The 2013 ISRM International Symposium. Wroclaw, Poland, 21-26 September 2013 CRC Press/Balkema, p. 691-696, ISBN/ISSN: 978-1-138-00080-3

Ferrero A.M., Migliazza M.R., Umili G. (2013). Comparison between different estimators of the rock mass degree of fracturing. In: Rock Mechanics for Resources, Energy and Environment. Proceedings of EUROCK 2013 - The 2013 ISRM International Symposium. Wroclaw, Poland, 21-26 September 2013CRC Press/Balkema, p. 129-134, ISBN/ISSN: 978-1-138-00080-3

Segalini A., Brighenti R., Umili G., Ferrero A.M. (2013). Verification of a simplified mechanical model for debris-flow protection barriers. Proceedings of the Twin Covilha International Conferences on Civil Engineering – Towards a Better Environment, CE 2013 and the Concrete Future CF 2013, pp. ce71-ce76, ISBN: 978-981076067-0.

Vigna R., Facello A., Gnavi L., Ferrero A.M., Umili G., Migliazza M.R. (2012). Rock slopes hazard analysis based on traditional and remote geostructural survey: case study Vernazza coast village (Cinque Terre National Park). 8th International Symposium on Geoinformation for Disaster Management, 13-15 December 2012, Enschede, The Netherlands, p. 53-66.

Umili G., Ferrero A.M. (2012). Un nuovo metodo automatico per la mappatura e il campionamento delle tracce di discontinuità su DSM. In: Atti dell'Incontro Annuale dei Ricercatori di Geotecnica IARG 2012. Padova, 2-4 Luglio 2012, RUBANO (PD): Grafiche Turato Edizioni, ISBN: 978-88-89524-67-1.

Umili G., Forlani G. (2011). Fusione di DSM ed immagini per l'estrazione automatica di linee di rottura dal DSM. Atti 15ª Conferenza Nazionale ASITA, 15 – 18 novembre 2011, Reggia di Colorno, p. 2083-2093.

Roncella R., Umili G., Forlani G., Re C., Butt P., Carrieri G., Rabbi E., Valentincic M. (2011). Produzione di DTM per la realizzazione di infrastrutture viarie da rilievi fotogrammetrici speditivi: due esperienze a confronto in India. Atti 15ª Conferenza Nazionale ASITA, 15 – 18 novembre 2011, Reggia di Colorno, p. 1863-1874.

Curtaz M., Ferrero A.M., Segalini A., Umili G. (2010). Study Of The Stability Analysis Of Rock Slopes On The Alps. ISRM International Symposium - 6th Asian Rock Mechanics Symposium, October 23 - 27, 2010, New Delhi, India.

Umili G., Roncella R., Forlani G. (2009). Studio e caratterizzazione di un laser scanner triangolatore a basso costo. Atti del Convegno nazionale della SIFET, Mantova, 23-26 giugno 2009, pp. 14-23. ISBN 88-901939-7-2.

Language skills

Mother tongue: Italian

Other language: English (Level B2, British Institute Certification, mark 86/100)