

José León **González Acosta**

Postdoctoral Researcher, Delft University of Technology

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Mexican, 36 years old, currently living in The Netherlands

Updated on April 27, 2023



Education

Doctor of Philosophy (Ph.D.) in Geotechnical Engineering

Delft University of Technology (TU Delft), The Netherlands

Oct, 2015
Oct, 2020

- Focus: Numerical simulations of large ground deformations (e.g., landslides) and soil-structure interaction problems using the Material Point Method (MPM)
- **Thesis:** "Investigation of MPM inaccuracies, contact simulation and robust implementation for geotechnical problems"

Master of Science (M.Sc.), in Geotechnical Engineering

National Autonomous University of Mexico (UNAM), Mexico

Aug, 2011
Sep, 2013

- Focus: Static and dynamic interaction between soft soils and structures
- **Thesis:** "Determinación de Asentamientos Considerando la Variación Horizontal de los Parámetros Mecánicos del Suelo" (Determination of Settlements Considering the Horizontal Variation of Soil Mechanical Parameters)

Bachelor of Science (B.Sc.), in Civil Engineering

Autonomous University of Baja California (UABC), Mexico

Oct, 2005
Jul, 2010

- Focus: Structural design, hydraulics, and soil mechanics

Academic Experience

Delft University of Technology (TU Delft), Delft, The Netherlands

Postdoctoral Researcher

Since
Jul, 2020

- Developed a numerical finite element (FE) architecture, incorporating novel and current techniques to analyze induced seismicity and earthquake-triggered liquefaction

- Led collaboration between SOFTTOP Ph.D. and Postdoctoral researchers to create a robust, in-house FE code, integrating soil spatial variability and laminated soils constitutive behavior
- Presented SOFTTOP project achievements at conferences and workshops, providing a comprehensive study of Groningen (The Netherlands) ground seismic characterization

National Autonomous University of Mexico Engineering Institute (UNAM), Mexico

Research Assistant

Feb, 2012
Sep, 2014

- Created new strategies using the Finite Difference Method (FDM) for analyzing water flow in earth structures
- Prepared technical reports on geotechnical conditions for building foundations, earth dams, subway tracks, and airport runways
- Conducted field work to develop strategic maps for the installation of seismic noise recorders

Industry Experience

GustoMSC, The Netherlands

Geotechnical Consultant

Jan, 2020
Jun, 2020

- Analysed static and dynamic stability of offshore structure foundations, such as Jackup rigs
- Documented essential principles for geotechnical analyses of offshore structures, incorporating the company's expertise and practices

Bowerbird Engineering, Mexico

Geotechnical Consultant

Oct, 2014
Sep, 2015

- Supported contractors in addressing geotechnical challenges (e.g., deep excavations, foundation stability, slope stability, soil-structure dynamic interaction) in Mexico City's complex subsoil conditions
- Developed technical manuals for performing numerical studies using MIDAS GTS NX
- Conducted workshops to train engineers in the appropriate use of the Finite Element Method (FEM) for analysing geotechnical problems

Proyectos Integrales (PIBCSA), Mexico

Construction Manager

Aug, 2010
Jul, 2011

- Prepared financial and schedule packages for bidding on city structure construction projects
- Managed and supervised construction projects, overseeing administration and execution

Teaching Experience

Mar, 2023	<p>Co-lecturer CIEM4000: "Soil Structure Interaction" Master's course, TU Delft</p> <p>In this module, the interactions between water loads and man-made geotechnical structures are investigated in static and dynamic conditions. Additionally, various procedures are explored for the design of geotechnical protective measures in response to these interactions.</p> <ul style="list-style-type: none"> • Covered fundamental principles of soil mechanics, including consolidation phenomenon, stability of slopes, and design of retaining and sheet pile walls • Co-managed the lecture structure, including timetable, teaching subjects, coursework, exam preparation, and grading
Since, 2016 5 Quarters	<p>Teaching assistant in the "Numerical Modelling in Geo-Engineering" Master's course, TU Delft</p> <ul style="list-style-type: none"> • Guided students in the concept of rational implementation of numerical techniques in geotechnical engineering • Assisted students in developing FORTRAN codes to perform numerical simulations of geotechnical problems • Graded students' technical reports
Dec, 2021	<p>Supervision and Assessment Principles course, TU Delft</p> <p>This training course is designed to help participants learn and reflect on essential skills needed to communicate and connect with students, including:</p> <ul style="list-style-type: none"> • Establishing an effective supervision process • Creating a safe and motivating learning environment • Providing effective feedback • Utilising assessment tools, such as rubrics, to make courses more effective and transparent <p>Master's students Co-supervisor, TU Delft</p> <ol style="list-style-type: none"> 1. Do P.C. (2021). Thesis: Implementing dynamic boundary conditions with the material point method. 2. Papakrivopoulos V. (2018). Thesis: Development and preliminary evaluation of the main features of the Particle Finite Element Method (PFEM) for Solid Mechanics. 3. Remmerswaal G. (2017). Thesis: Development and implementation of moving boundary conditions in the Material Point Method. 4. Pantev I. (2016). Thesis: Contact modelling in the Material Point Method. 5. Pruijn N.S. (2016). Thesis: The improvement of the material point method by increasing efficiency and accuracy.

Workshop Attendance

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| Mar, 2019 | 1. Introduction to seismo-acoustic waves in the Earth's spheres, TU Delft. |
| May, 2018 | 2. Introduction to high performance computing, TU Delft. |
| Oct, 2016 | 3. Landslide Risk Assessment and Mitigation, Salerno, Italy. |

Publications

Journal Articles

1. **González Acosta J.L.**, Vardon P.J., Hicks M.A. (2021). Study of landslides and soil-structure interaction problems using the implicit material point method. *Engineering Geology*, 285, 106043.
DOI: [10.1016/j.enggeo.2021.106043](https://doi.org/10.1016/j.enggeo.2021.106043)
2. **González Acosta J.L.**, Vardon P.J., Hicks M.A. (2021). Development of an implicit contact technique for the material point method. *Computers and Geotechnics*, 130, 103859.
DOI: [10.1016/j.compgeo.2020.103859](https://doi.org/10.1016/j.compgeo.2020.103859)
3. **González Acosta J.L.**, Vardon P.J., Remmerswaal G., Hicks M.A. (2020). An investigation of stress inaccuracies and proposed solution in the material point method. *Computational Mechanics*, 65(2), 555-581.
DOI: [10.1007/s00466-019-01783-3](https://doi.org/10.1007/s00466-019-01783-3)
4. **González Acosta J.L.**, Vardon P.J., Hicks M.A. (2017). Composite material point method (CMPM) to improve stress recovery for quasi-static problems. *Procedia Engineering*, 175, 324-331.
DOI: [10.1016/j.proeng.2017.01.037](https://doi.org/10.1016/j.proeng.2017.01.037)
5. López-Acosta N.P., **González Acosta J.L.** (2015). Study of Water Flow in Dams using Successive Over-relaxation. *Tecnología y Ciencias del Agua*, 6(5), 43-58.
ISSN 2007-2422

Conference Articles

1. **González Acosta J.L.**, van den Eijnden A.P., Hicks M.A. Periodic random fields to perform site response and liquefaction susceptibility analysis. Proceedings 10th NUMGE 2023. London, England. (Accepted manuscript)
2. Bayraktaroglu H., **González Acosta J.L.**, van den Eijnden A.P., Korff M., Hicks M.A. Numerical investigation of liquefaction susceptibility of sands considering fabric effects. Proceedings 10th NUMGE 2023. London, England. (Accepted manuscript)
3. **González Acosta J.L.**, van den Eijnden A.P., Hicks M.A. Comparison of 1D and 2D liquefaction assessment methods considering soil spatial variability. 8th International Symposium on Geotechnical Safety and Risk (ISGSR 2022). Newcastle, Australia.
DOI: [10.3850/978-981-18-5182-7-14-001-cd](https://doi.org/10.3850/978-981-18-5182-7-14-001-cd)

4. **González Acosta J.L.**, van den Eijnden A.P., Hicks M.A. (2022). Liquefaction Assessment and Soil Spatial Variation. International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG). Torino, Italy. pp. 283-290.
DOI: [10.1007/978-3-031-12851-6_34](https://doi.org/10.1007/978-3-031-12851-6_34)
5. Do P.C., **González Acosta J.L.**, Vardon P.J., Hicks M.A. (2022). Implementing dynamic boundary conditions with the material point method. International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG). Torino, Italy. pp. 221-228.
DOI: [10.1007/978-3-031-12851-6_27](https://doi.org/10.1007/978-3-031-12851-6_27)
6. Zheng X., **González Acosta J.L.**, Remmerswaal G., Vardon P.J., Pisanò F., Hicks M.A. (2021). Development of a Robust Coupled Material Point Method. International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG). Torino, Italy. pp. 819-826.
DOI: [10.1007/978-3-030-64514-4_88](https://doi.org/10.1007/978-3-030-64514-4_88)
7. **González Acosta J.L.**, Zheng X., Vardon P.J., Hicks M.A., Pisanò F. (2019). On stress oscillation in MPM simulations involving one or two phases. Proceedings of the Second International Conference on the Material Point Method for Modelling Soil-Water Structure Interaction. Cambridge, UK.
[Institutional Repository](#)
8. **González Acosta J.L.**, Vardon P.J., Hicks M.A., Pantev I. (2018). The use of MPM to estimate the behaviour of rigid structures during landslides. Proceedings of the 9th European Conference on Numerical Methods in Geotechnical Engineering (NUMGE). Porto, Portugal.
[Institutional Repository](#)
9. **González Acosta J.L.**, Vardon P.J., Hicks M.A., (2017). An evaluation of MPM, GIMP and CPM in geotechnical problems considering large deformations. International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG). Wuhan, China.
10. **González Acosta J.L.** (2015). Dynamic response of vertical sand drains in a zone with seismic amplification. From Fundamentals to Applications in Geotechnics. Buenos Aires, Argentina.
DOI: [10.3233/978-1-61499-603-3-1153](https://doi.org/10.3233/978-1-61499-603-3-1153)
11. **González Acosta J.L.**, López-Acosta N.P. (2014). Aplicación de la técnica de Sobre-relajación Sucesiva a problemas de flujo de agua confinado y no confinado. Memorias de la XXVII Reunión Nacional de Ingeniería Geotécnica. Puerto Vallarta, México.
[Research Gate](#)
12. **González Acosta J.L.** (2014). Método riguroso para el cálculo de asentamientos considerando la variación horizontal de los parámetros mecánicos del suelo. Memorias de la XXVII Reunión Nacional de Ingeniería Geotécnica. Puerto Vallarta, México.
[Research Gate](#)

Book Chapter

- Book Title: Temas selectos de análisis numéricos aplicado a la ingeniería geotécnica.
Chapter 7: Método del punto material.
Edition: Mexican Society of Geotechnical Engineering: ISBN 978-607-99185-5-2

Poster Presentation

- **González Acosta J.L.**, van den Eijnden A.P., Hicks M.A. (2022). Assessing traditional techniques to analyse free-field ground response. Achilles-TU Delft Workshop. Delft, The Netherlands.
- **González Acosta J.L.**, Varkey D., Hicks M.A. (2022). Liquefaction of a heterogeneous subsoil due to seismic loading. DeepNL Workshop. Utrecht, The Netherlands.
- Remmerswaal G., Vardon P.J., Hicks M.A., **González Acosta J.L.** (2017). Development and implementation of moving boundary conditions in the Material Point Method. ALERT Workshop. Aussois, France.

Academic Visits

- Oct, 2017 | • Guest researcher: Chinese Academy of Science, Institute of Rock and Soils Mechanics, Wuhan, China.
- Aug, 2008 | • Studentship: National Autonomous University of Mexico (UNAM)
- Dec, 2008

Invited Talk

- Oct, 2022 | • **Mexican Society of Geotechnical Engineering (SMIG), Mexico City.**
"Análisis de Problemas Geotécnicos Mediante el Método del Punto Material (MPM)" (Geotechnical Problems Analyses Using the Material Point Method (MPM)).

Courses Taught

- Jun, 2015 | • Tabasco Colleague of Civil Engineers (CICT), Tabasco: Numerical modelling of excavations and foundations using MIDAS GTX NX.
- Jul, 2015 | • Mexico City Colleague of Civil Engineers (CICM), Mexico City: Numerical modelling of deep excavations and deep foundations using MIDAS GTS NX.
- May, 2015 | • Nuevo Leon Colleague of Civil Engineers (CICNL), Nuevo Leon: Numerical modelling of deep excavations and deep foundations using MIDAS GTS NX.
- Apr, 2015 | • Mexican Society of Geotechnical Engineering (SMIG), Mexico City: Numerical modelling of ground dynamic behaviour considering undrained conditions using MIDAS GTS NX.

Affiliations

- Since May, 2022 | • Mexican Society of Geotechnical Engineering (SMIG).
Representative of the "Numerical Modelling" Chair.

Peer Reviewer At

Natural Hazards Journal	Engineering Computations Journal
Geoscientific Model Development Journal	J. of Rock Mechanics and Geotechnical Eng.

Academic Scholarships

- 2015 CONACYT Mexican scholarship for PhD studies abroad (grant no. 409778)
- 2013 Research assistant scholarship from the National Autonomous University of Mexico (UNAM) Engineering Institute
- 2010 CONACYT Mexican scholarship for MSc studies (grant no. 324445)

Languages

Spanish (Native)	Dutch (Basic)
English (Fluent)	Italian (Basic)

References

1. **Prof. dr. Michael A. Hicks**, Head of the Geo-Engineering Section - TU Delft
M.A.Hicks@tudelft.nl +31 (0)15 2787433
2. **Prof. dr. Philip J. Vardon**, Associate Professor Geo-Engineering - TU Delft
P.J.Vardon@tudelft.nl +31 (0)15 2781456
3. **Dr. Luis Miguel Pinto Carvalho**, Director MAURER SPS - México
pinto@maurer.mx +52 (55) 6380 1158
4. **Dr. Norma Patricia López Acosta**, Associate Professor of Soil Mechanics - UNAM
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5. **Prof. dr. Rigoberto Rivera Constantino**, Professor of Soil Mechanics - UNAM
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