CURRICULUM VITAE

HOSSEIN KHEIRKHAH GILDEH

Water Resources Engineer (PhD, PEng)

BASc (Civil) IUST, MASc (Water Resources) UOttawa, PhD (Water Resources) UOttawa Water Resources Engineer – Barr Engineering Co., Calgary, AB, Canada Sessional Instructor, Civil Engineering – University of Ottawa, Ottawa, ON, Canada Tel: (403) 585 9546 E: h.kheirkhah.gil@gmail.com | hgildeh@barr.com| hkhei096@uottawa.ca

EDUCATION

Doctor of Philosophy in Civil Engineering

UNIVERSITY OF OTTAWA, Ottawa, ON, Canada

- Graduating GPA: A⁺
 - Scholarships: The Natural Sciences and Engineering Research Council of Canada (PGSD) Ontario Graduate Scholarship (OGS) The Queen Elizabeth II Graduate Scholarship in Science and Technology (QEII-GSST)
 - University of Ottawa Excellence Scholarship
- Thesis Topic: CFD Study of Dense Effluent Discharges in Deep and Shallow Waters
- Some Courses: Engineering Mathematics, Engineering Hydrology and Hydraulics

Master of Applied Science in Civil Engineering

UNIVERSITY OF OTTAWA, Ottawa, ON, Canada

- Graduating GPA: A⁺
- Grants: Research Grant from Qatar National Research Fund
- Thesis Topic: Numerical Modelling of Thermal/Saline Discharges into Coastal Waters
- Some Courses: Coastal Structures, Computational Hydrodynamics, Climate Change, Reliability Engineering, Arc GIS

Bachelor of Science in Civil Engineering

IRAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, Tehran, Iran

- Graduating GPA: B⁺
 - Research Topic: Experimental Study of Surface Discharges of Dense Effluents into the Stationary Ambient Water
 - Some Courses: Environmental Engineering, Open Channel Hydraulics, Soil Mechanics, Engineering Economy, Mechanics of Materials, Numerical Methods, Fluid Mechanics, Hydraulic Structures, Hydrology, Surveying, Geology Engineering

EMPLOYMENT

Water Resources Engineer (PEng, AB, BC, SK)

BARR ENGINEERING CO.: Water Resources Engineering Team, Calgary, AB, Canada

- Business development and marketing for Barr's local business in Alberta. Business philosophy: organizational open and collective teamwork to help the clients.
- Project manager for various projects including but not limited to river engineering, watershed studies, master drainage planning, dam breach inundation studies, hydrology impact assessment, mine water management, hydraulic structure design projects, etc.
- Project design engineer for stream bank protection, riprap and erosion risks, pipeline geohazards, tailings dam breach analysis, coastal shoreline protection, hydraulic structure analysis and design, etc.
- Hydrotechnical lead for hydrologic and hydraulic modelling studies using 1D and 2D modelling tools such as HydroCAD, HY-8, HEC-SSP and HEC-RAS on large mining projects (potash, coal, oil sands, etc.).

September 2011 – May 2013

September 2006 – June 2011

March 2021 – Present

January 2018 – November 2021

Sessional Instructor

UNIVERSITY OF OTTAWA, Ottawa, ON, Canada

CVG 2116 – Introduction to Fluid Mechanics

Sessional Instructor

UNIVERSITY OF OTTAWA, Ottawa, ON, Canada

- CVG 2116 – Introduction to Fluid Mechanics

Water Resources Engineer (PEng, AB)

GOLDER ASSOCIATES LTD.: Water Resources Engineering Team, Calgary, AB, Canada

- Project manager for various projects including but not limited to river and coastal hydrodynamic and dispersion modelling, flood hazard and mapping studies, dam breach inundation studies, civil design projects, etc.
- Project design engineer for outfall, river bank protection, riprap, fish barrier, boat launch, spillway, etc. designs.
- Project engineer on several flood hazard studies and flood inundation mapping studies including Alberta Environment and Parks Flood Hazard Studies.
- Key modelling specialist for hydraulic modelling studies on various rivers in Western Canada that employed 1D and/or 2D model suites. Clients of these modelling studies included: The City of Calgary; Alberta Environment and Parks; Suncor Energy; and Imperial Oil.
- Modelling specialist for 3D hydrodynamic modelling tasks for Environment Canada and Public Services and Procurement Canada to predict effluent dispersion and mixing in several coastal areas in British Columbia.
- Modelling specialist for several water and tailings dam breach studies in Canada and internationally including Anglo American Dam Breach Analysis to conduct Newtonian and non-Newtonian dam breach modelling.
- Golder's lead of an NSERC ENGAGE collaboration with the University of Ottawa on scour analysis due to debris damming.

Sessional Instructor

January 2019 – April 2020

SOUTHERN ALBERTA INSTITUTE OF TECHNOLOGY: Integrated Water Management, Calgary, AB, Canada

- Consulted the IWM Program for the design and launch of courses.
- Learning design and curriculum development for multiple courses including Water Fundamentals, Developments in Technology, Data Management and Analytics.
- Teaching multiple courses: Water Fundamentals (WATR203), Developments in Technology (TECH200), Data Management and Analytics (DATA200).
- Interacting with students in class, in person and online for learning activities and assignment solving.

Teaching Assistant

January 2012 – May 2013 (MASc) and May 2020 – June 2021 (PhD)

UNIVERSITY OF OTTAWA, Ottawa, ON, Canada

- CVG 3132 Physical/chemical Operations of Water Graded assignments and exams.
- CVG 2181 Numerical Modelling in Civil Engineering Assisted and graded computer lab assignments and projects.
- CVG 2171 Surveying and Measurements Instructed measurements, graded assignments.

Research AssistantSeptember 2011 – January 2014 (MASc) and January 2018 – November 2021 (PhD)UNIVERSITY OF OTTAWA, Ottawa, ON, Canada

- Study of the effluent discharges and mixing mechanism into water bodies.
- Research and development of pisoFoam, interFoam, and twoLiquidMixingFoam solvers in OpenFOAM.
- Investigated the accuracy of various RANS turbulence models to predict the mixing of effluents in near-field zone.
- Prepared the journal and conference papers for well-known journals and conferences in the field.
- Collaborated in the development of indicators for accreditation of the CVG program at the UOttawa.

Engineering Student

YEKOM CONSULTING ENGINEERS: Water Resources Engineering Team, Tehran, Iran

- Engineer assistant for design, simulation and optimization of river and watershed projects.
- Cost estimation for different projects.
- Assisted in preparation of technical reports.

March 2009 – October 2009

2

February 2014 – December 2020

ORGANIZATIONAL ROLES

Committee Member (3-Year Term) of Diversity, Equity and Inclusion (DEI)

BARR ENGINEERING CO., Calgary, AB, Canada

As part of DEI committee member, I collaborate with other members (along with Barr's CEO) to support and promote equal opportunity for all people without regard to race, color, creed, religion, national origin, gender identity, marital or familial status, disability, age, veteran status, sexual orientation, or any other status, affiliation, or form of difference that is regulated by law or not relevant to the job requirements. Increasing Barr's employee diversity and demonstrating inclusive behaviors within the company is essential to sustaining it as a great place to work.

Chair of Monthly Water Talks

GOLDER ASSOCIATES LTD., Calgary, AB, Canada

 I worked with the water management team to initiate the Monthly Water Talks for three groups within water team: surface water, ground water and water quality. The monthly talks at lunch time intended to provide junior and intermediate staff a platform that they could practice their technical presentation skills in front of 30 to 50 staff with different experience levels (from junior to very senior). The program was very well received with great feedback and it is still ongoing after almost 4 years (to the best of my knowledge).

Panel Member of Technical Innovation

GOLDER ASSOCIATES LTD., Calgary, AB, Canada

- As part of the Technical Innovation Panel, my role was to work with other panel members to review internal innovation proposals and their suitability for internal grant. I also participated in promoting the technical innovation within water resources engineering teams at Golder around the world.

AWARDS AND HONOURS

2021 Ontario Graduate Scholarship (OGS)

2021 The Queen Elizabeth II Graduate Scholarship in Science and Technology (QEII-GSST)

2018-2020 NSERC Postgraduate Scholarship - Doctoral (PGSD)

2018-2021 University of Ottawa Excellence Scholarship

2014 Travel Grant Award for International Conference on Desalination, Environment & Marine Outfall Systems, Muscat, Oman

2013 Award of Excellence from Canadian Society for Civil Engineering (CSCE), Research Poster Competition **2009** First place of 7th National Competition of Concrete Day in Iran

SKILLS

Professional

- Project management for various sizes of water resources projects
- Strong theoretical knowledge of open channel hydraulics, hydrology, water quality, pollutant dispersion, and fluvial geomorphology
- Strong theoretical and practical experience with water and tailings dam breach analysis
- Strong theoretical and practical experience with flood hazard modelling and inundation mapping
- Experienced in water resources design projects for conceptual, preliminary, and detailed designs
- Planning and executing land, bathymetric, hydrometric, and unmanned aerial vehicle surveys
- Strong teamwork, effective collaborator, strong communication skills, quick learner, and highly selfmotivated

Modelling

- Hydrology Modelling: HydroCAD, HEC-SSD
- 1D hydrodynamic modelling: HY-8, DHI MIKE 11, HEC-RAS, FLDWAV
- 2D hydrodynamic and morphodynamic modelling: DHI MIKE FLOOD, DHI MIKE21, HEC-RAS, FLO-2D, River2D, ADH
- 3D hydrodynamic and morphodynamic modelling: DHI MIKE3, FLOW Science FLOW-3D, Delft-3D FM, OpenFOAM, FLUENT

3

January 2022 – Present

May 2018 – October 2019

January 2019 – December 2021

Other Computer Skills

- Mapping and Spatial Analysis: ESRI ArcGIS, BlueKenue, Surfer, Global Mapper
- Microsoft Office: Word, Excel, PowerPoint, Project, Access

PROFESSIONAL MEMBERSHIP

Professional Engineer (PEng) in Alberta, British Columbia and Saskatchewan Member, Canadian Society for Civil Engineering (CSCE) Member, American Society of Civil Engineers (ASCE)

REVIEWER FOR PEER-REVIEWED JOURNALS

Journal of Hydraulic Engineering (ASCE) Journal of Turbulence (T&F) Journal of Hydro-environment Research (ELSEVIER) Journal of Applied Water Engineering and Research (T&F) Journal of Environmental Fluid Mechanics (Springer) Engineering Applications of Computational Fluid Mechanics (T&F) Journal of Ocean Engineering (ELSEVIER)

PUBLICATIONS

Peer-Reviewed Journals (sorted by year)

- 1. Kheirkhah Gildeh, H., Mohammadian, A., and Nistor, I. (2022). "Vertical Dense Effluent Discharge Modelling in Shallow Waters", Under Review at the Water and Environment Journal (Wiley).
- Kheirkhah Gildeh, H., Mohammadian, A., and Nistor, I. (2021). "Inclined Dense Effluent Discharge Modelling in Shallow Waters", J. Environ. Fluid Mech. (Springer), . 21, 955–98, doi.org/10.1007/s10652-021-09805-6.
- Kheirkhah Gildeh, H., Nistor, I., and Mohammadian, A. (2021). "Discussion of Applied Research Can Enhance Hydraulic Engineering Education By Robert Ettema, Christopher Thornton, Pierre Julien, and Taylor Hogan", J. Hydraul. Eng. (ASCE), doi.org/10.1061/(ASCE)HY.1943-7900.0001870.
- Kheirkhah Gildeh, H., Tang, G., Ploeger, W., and Long, D. (2021). "Discussion of Hydraulic Model Calibration Using Water Levels Derived from Time Series High-Resolution SAR Images By Nicolas M. Desrochers, Melanie Trudel, Daniel L. Peters, Gabriela Siles, and Robert Leconte", J. Hydraul. Eng. (ASCE), doi.org/10.1061/(ASCE)HY.1943-7900.0001888.
- Kheirkhah Gildeh, H., Halliday, A., Arenas, A., and Zhang, H. (2020). "Tailings Dam Breach Analysis: A Review of Methods, Practices, and Uncertainties", J. Mine Water Environ. (Springer), https://doi.org/10.1007/s10230-020-00718-2.
- Mohammadian, A., Kheirkhah Gildeh, H., and Nistor, I. (2020). "CFD Modeling of Effluent Discharges: A Review of Past Numerical Studies", J. Water (MDPI), 12, 856.
- Alfaifi, H., Mohammadian, A., Kheirkhah Gildeh, H., and Gharavi, A. (2018). "Experimental and numerical study of the characteristics of thermal and nonthermal offset buoyant jets discharged into stagnant water", J. Des. & Wat. Treat. (Deswater), doi:10.5004/dwt.2019.23477.
- Shaheed, R., Mohammadian, A., and Kheirkhah Gildeh, H. (2018), "A comparison of standard k–ε and realizable k–ε turbulence models in curved and confluent channels", J. Environ. Fluid Mech. (Springer), 19(2): 543-568.
- Kheirkhah Gildeh, H., Mohammadian, A., Nistor, I., Qiblawey, H., and Xiaohui, Y. (2015). "CFD Modelling and Analysis of the Behavior of 30° and 45° Inclined Dense Jets; New Numerical Insights", J. Appl. Water. & Eng. (T&F), DOI:10.1080/23249676.2015.1090351.
- Kheirkhah Gildeh, H., Mohammadian, A., Nistor, I., and Qiblawey, H. (2014). "Numerical modeling of 30° and 45° inclined dense turbulent jets in stationary ambient", J. Environ. Fluid Mech. (Springer),15(3): 537-562.
- 11. Kheirkhah Gildeh, H., Mohammadian, A., Nistor, I., and Qiblawey, H. (2014). "Numerical modeling of turbulent buoyant wall jets in stationary ambient water", J. Hydraul. Eng. (ASCE), 140(6), 04014012.

HOSSEIN KHEIRKHAH GILDEH

- Abessi, O., Saeedi, M., Hajizadeh Zaker N., and Kheirkhah Gildeh, H. (2010). "Waste field characteristics, ultimate mixing and dilution in surface discharge of dense jets into stagnant water bodies", (in Persian) Journal of Water & Wastewater, Tehran, Iran.
- 13. Abessi, O., Saeedi, M., Hajizadeh Zaker N., and **Kheirkhah Gildeh, H.** (2010). "Flow characterization dilution in surface discharge of negatively buoyant flow in stagnant and non-stratified water bodies", (in Persian) Journal of Water & Wastewater, Tehran, Iran.
- 14. Abessi, O., Saeedi, M., and **Kheirkhah Gildeh, H.** (2010). "Undesirable consequences of coastal desalination plants on environment and control methods of it", (in Persian) Journal of Water & Environment, Tehran, Iran.

Peer-Reviewed Book Chapters (sorted by year)

 Kheirkhah Gildeh, H., Mohammadian, A., and Nistor, I. (2020). "Mixing of inclined dense jets: a numerical modeling", Water Engineering Modelling and Mathematic Tools (Elsevier), https://doi.org/10.1016/B978-0-12-820644-7.00023-2.

Peer-Reviewed Conferences (sorted by year)

- Kheirkhah Gildeh, H., Hosseini, P., Zhang, H., Riaz, M., Acharya, M. (2019) Canal Embankment Failure Mechanism, Breach Parameters and Outflow Predictions. International Commission on Large Dams, June 8-14. Ottawa, Canada.
- 2. Esmaeeli Mohsenabadi, S., Mohammadian, A., Nistor, I., **Kheirkhah Gildeh, H.** (2019) CFD Modelling of Near-Field Dam Break Flow. International Commission on Large Dams, June 8-14. Ottawa, Canada.
- Alfaifi, H., Mohammadian, A., and Kheirkhah Gildeh, H. (2016) Comparison of Salinity and Temperature Mixing: Experimental and Numerical Study. International Symposium on Outfall Systems, May 10-13. Ottawa, Canada.
- 4. Shaheed, R., Mohammadian, A., and **Kheirkhah Gildeh, H.** (2016) 3D Numerical Modelling of Secondary Current in the Shallow River Bends and Confluences. International Symposium on Outfall Systems, May 10-13. Ottawa, Canada.
- Kheradmand, S., Mohammadian, A., Seidou, O., and Kheirkhah Gildeh, H. (2015) Numerical and Experimental Investigation of Saline Discharges in Stationary Ambient. CSCE Hydrotechnical Conference, April 29-May 2. Montreal, Canada.
- Alfaifi, H., Mohammadian, A., and Kheirkhah Gildeh, H. (2015) Experimental and Numerical Study of Thermal Buoyant Wall Jet in Calm Ambient Water. CSCE Hydrotechnical Conference, April 29-May 2. Montreal, Canada.
- 7. **Kheirkhah Gildeh, H.**, Mohammadian, A., Nistor, I., and Qiblawey, H. (2014) Numerical Modelling of Brine Discharges Using OpenFOAM. New Trend in Transport Phenomena, May 1-2. Ottawa, Canada.
- 8. **Kheirkhah Gildeh, H.**, Mohammadian, A., Nistor, I., and Qiblawey, H. (2014) Geometrical Characteristics of Inclined Negatively Buoyant Jets: A Numerical Approach. International Conference on Desalination, Environment & Marine Outfall Systems, April 13-16. Muscat, Oman.
- 9. Kheirkhah Gildeh, H., Mohammadian, A., Nistor, I., and Qiblawey, H. (2013) Numerical Simulation of Thermal Buoyant Wall Jets. CSCE Annual Conference, May 29 June 1. Montreal, Canada.

Volunteer Experiences

Research Advisor at the University of Ottawa Water Resources Engineering Program, Ottawa, ON, Canada March 2014 – Present

Employment Coach, Mentor, Interpreter and Translator Immigrant Services Calgary (ISC), Calgary, AB, Canada

HOSSEIN KHEIRKHAH GILDEH

Mentor and Career Development Lead Golder Associates Ltd., Calgary, AB, Canada

Kitchen Aid and Socializer St. Peter & St. Paul Church, Ottawa, ON, Canada

REFERENCES AND SUPPORTING DOCUMENTS ARE AVAILABLE UPON REQUEST

January 2018 – December 2020

June 2012 – January 2014