MD SADIUL ALAM CHYON

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EDUCATION

PhD, Geography. University of Illinois at Urbana-Champaign — Expected Spring 2026
MSc, Water Resources Development. Bangladesh University of Engineering & Technology — 2021
BSc, Water Resources Engineering. Bangladesh University of Engineering & Technology — 2015

RESEARCH EXPERIENCE

Research Assistant with Dr. Jim Best — 2021–Present
Department of Geography & GIS, University of Illinois

- **Computational Modeling & Data Analysis:** Automated monitoring of sediment transport and extraction intensity using Python, deep learning, and high-resolution satellite imagery to generate spatio-temporal hotspot metrics.
- **Remote Sensing & Hydrology:** Quantified multi-decadal sediment extraction and land-water change using Google Earth Engine and machine learning to support watershed-scale decision making.
- **Fieldwork & Synthesis:** Estimated geomorphic disturbance and recovery from gravel mining using remote sensing and field-informed methods; diagnosed community and land-use impacts using mixed-methods fieldwork.
- **Policy Application:** Translated socio-ecological evidence into governance and restoration recommendations for watershed planning.

Research Assistant with Dr. M. Shahjahan Mondal — 2019–2021
Institute of Water and Flood Management, Bangladesh University of Engineering & Technology

- **Hydrologic Modeling:** Modeled flood vulnerability risk in Madaripur Sadar Upazila using a calibrated HEC-HMS hydrologic model and a coupled HEC-RAS 1D/2D hydraulic model.

Undergraduate Student with Dr. Ataur Rahman — 2014–2015
Department of Water Resources Engineering, Bangladesh University of Engineering & Technology

- **Physical Modeling:** Conducted a controlled flume study of horizontal slotted submerged breakwaters, evaluating hydraulic performance coefficients and analyzing experimental data.

PROFESSIONAL EXPERIENCE

Civil Engineer, Bangladesh Water Development Board (BWDB) — 2016–2020

- Built catchment hydrologic analyses/models to support watershed drainage and flood-risk decisions.
- Supervised field operations, including construction and field QA/QC for hydraulic and bank-stabilization works.
- Co-managed $2M project planning and implementation (work plans, coordination, reporting).
- Produced designs and quantity/cost estimates for hydraulic structures and riverbank protection.

Intern, River Morphology Division, Institute of Water Modeling (IWM) — Aug 2015

TECHNICAL SKILLS

- **Programming & Deep Learning:** Python (Data Analysis & Visualization; YOLO; PyTorch)
- **Geospatial & Simulation Tools:** ArcGIS Pro, Google Earth Engine, HEC-HMS, HEC-RAS
- **Scripting & Documentation:** LaTeX, GitHub

TEACHING & MENTORING EXPERIENCE

Teaching Assistant, Department of Geography & GIS
University of Illinois at Urbana-Champaign

- Earth's Physical Systems — Fall 2023
  - designed and delivered the lab sessions
- Global Development & Environment; Social & Environmental Issues — Fall 2022, Spring 2023
  - graded assignments and proctored exams

Adjunct Lecturer, Department of Civil Engineering
Bangabandhu Sheikh Mujibur Rahman Science & Technology University

- GIS & Remote Sensing; Fluid Mechanics — Spring 2018, Fall 2018
  - designed and delivered lectures in a class of 60 students

Mentoring: Mentored three Roepke Summer Undergraduate Scholars to build deep-learning training data (image annotation), collect and process drone imagery, support qualitative field surveys, and communicate results.

FELLOWSHIPS, AWARDS & GRANTS

- **Russel Fellowship** (2024–2025) — $25,000
- **Schlesinger Research Travel Grant** (2022, 2023, 2024) — $1000 each year
- **Graduate Student Summer Field Research Award** (2021, 2022, 2023) — $500 each year
- **Dissertation Travel Grant** (2023) — $6,000
- **Fred W. and D. Foster Graduate Fellowship in Geography** (2021) — $4,000
- **South Asian Water Fellowship** (2015–2016) — $5,700

ACADEMIC SERVICES

Co-Chair, River Morphodynamics, Symposium on River, Coastal and Estuarine Morphodynamics 2023
Reviewer, Springer Nature Social Sciences — Since 2024

INVITED TALKS/POSTERS

- **AGU Fall Meeting**, New Orleans, LA, Dec 18, 2025 (Talk)
- **SESE Research Review**, Champaign, IL, Feb 2, 2024 (Poster). *Awarded Best Poster*
- **Symposium on River, Coastal and Estuarine Morphodynamics**, Champaign, IL, Sep 27, 2023 (Talk)
- **AGU Fall Meeting**, San Francisco, CA, Dec 11, 2023 (Poster)
- **AGU Fall Meeting**, Chicago, IL, Dec 15, 2022 (Poster)

PUBLICATIONS

Journal Articles

- **Chyon, M. S. A.**, Best, J., & Haq, S. M. A. (2026). From extraction to recovery: Geomorphic and social transformations of gravel mining, Lubha River, Northeast Bangladesh. *Cell Reports Sustainabilityt*, 3(1), 100605.
- **Chyon, M. S. A.**, Biswas, S., Mondal, M. S., Roy, B., & Rahman, A. (2023). Integrated assessment of flood risk in Arial Khan floodplain of Bangladesh under changing climate and socioeconomic conditions. *Journal of Flood Risk Management*, 16(2), e12876.
- **Chyon, M. S. A.**, Rahman, A., & Rahman, D. M. A. (2017). Comparative Study on Hydrodynamic Performance of Porous and Non-Porous Submerged Breakwater. *Procedia Engineering* (Elsevier), 194,

203–210.

- **Chyon, M. S. A.**, & Rahman, A. (2017). Hydrodynamic and Morphological Impact of Hydraulic Structural Interventions: An Investigative Case Study on Feni-Muhuri River System of Bangladesh. *Journal of Water Resources and Pollution Studies*, 2(2), 1–15.

Journal Articles Under Review

- Park, E., Hackney, C. R., Bendixen, M., Best, J., Tran, D. D., Yuen, K. W., Runeckles, H., **Chyon, M. S. A.**, et al (2025). Global patterns, drivers, and impacts of riverine sand and gravel mining: Implications for sustainable management. *Reviews of Geophysics*.
- Khatun, M. M., Hasan, M. A., **Chyon, M. S. A.**, et al (2025). Estimating soil organic carbon by integrating mid-infrared spectroscopy with explainable machine learning. *Sensing & Bio-Sensing Research*.

Book Review

- *Water Use and Poverty Reduction*, by Md. Fakhrul Islam. Reviewed in *SAWAS Journal*, 8(1), June 2018.

Conference Proceedings

- Nourin, F. T. J., Mahmood, S., **Chyon, M. S. A.**, Siddika, A., & Khan, M. S. A. (2017). Assessment of different dimensions of irrigation water security in a coastal polder of Bangladesh. *6th International Conference on Water & Flood Management,* Dhaka, Bangladesh, November 17.
- **Chyon, M. S. A.**, Rahman, A., & Samarakoon, S. M. L. D. (2017). Gender analysis of irrigation projects: A comparative analysis on Mahaweli irrigation project and Carchi irrigation project. *6th International Conference on Water & Flood Management,* Dhaka, Bangladesh, November 17.
- **Chyon, M. S. A.**, & Rahman, A. (2016). Laboratory study on performance of horizontal slotted submerged breakwater. *3rd International Conference on Civil Engineering for Sustainable Development (ICCESD)*, Khulna, Bangladesh, February 12–14.

REFERENCES

James L. Best, PhD Advisor
Jack C. Threet and Richard L. Threet Professor
Department of Earth Science & Environmental Change; Department of Geography & Geographic Information Science
University of Illinois Urbana-Champaign
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Chester and Helen Siess Endowed Professor in Civil and Environmental Engineering
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