

# PHAM VAN SONG

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Vice President for Research, Head of Research Management Department, Vietnamese-German University

Assoc. Prof., Team Leader, Artificial Intelligence and Water Resources Engineering research group

## EDUCATION

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**Berlin University of Technology (TU Berlin), Germany** *January 2009*

PhD in Civil Engineering

**University of Stuttgart, Germany** *June 2004*

MSc in Water Resources Engineering and Management

**Hanoi Water Resources University, Vietnam** *June 1999*

Engineer Degree in Hydraulic Engineering

## EXPERIENCE

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**Vietnamese-German University** *June 2017 - Present*

*Associate Professor, Vice President for Research cum Head of Research Management Department*

- Responsibilities for development of research center, institutes, groups; cooperation with German partners, domestic and international partners to foster research projects, academic exchanges, student exchanges, organizing scientific seminar, conferences to improve VGU reputation as well as to lead VGU to become a research university
- Responsibilities for utilize efficiently University's resources to meet the University's development targets; develop governance's framework, organization structure, internal regulations and management procedures to establish an effective, efficient, streamlined and modern governance framework based on the inherited experience of the German and Vietnamese system as well as in the world within the scope of works assigned

**Thuyloi University** *October 2015 - May 2017*

*Vice President of Thuyloi University - Southern Campus, Vice - Director of Institute for Water and Environment Research, Head of Department of Civil Engineering*

- Building the university research strategies
- Managing the research activities, industrial relations and technology transfer activities in the universities
- Coordinating and teaching the International Master course Sustainable Hydraulic Structures

**Thuyloi University** *September 2013 - September 2015*

*Associate Professor, Head of Academic and Student Affairs Department*

**Thuyloi University** *May 2013 - September 2013*

*Director, Center for Water Resources and Climate Change Research*

**Southern Institute of Water Resources Research** *June 2009 - April 2013*

*Deputy Director, Center for Hydraulic Engineering and Hydromechanics*

**Berlin University of Technology** *December 2005 - May 2009*

*Researcher, Chair of Water Resources Management and Modeling of Hydrosystems* *Germany*

**Southern Institute of Water Resources Research** *August 1999 - August 2002*

*Researcher, Department of Hydraulic Engineering and Hydromechanics*

## RESEARCH INTERESTS

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CFD, Hydrology, Modeling development and hydroinformatics, Water Resources Engineering and Management, River Engineering, AI for Water Resources Management

## TEACHING EXPERIENCES

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**Teaching Assistant** (Spring 2006, 2007, 2008)

- Coupling free-surface and groundwater modeling - TU Berlin

**Teaching Assistant** (Fall 2007)

- Short Course Modeling of Hydrosystems - TU Berlin
- Environmental Fluid Mechanic - TU Berlin

**Teaching Assistant** (Fall 2007)

- Numerische Modellierung und Hydroinformatik I - TU Berlin

**Teaching** (2010 - now)

- Physical Modeling and Measurement Techniques - MSc course in Joint Education Master program in Sustainable Hydraulic Structure, University of Liege – Water Resources University

**Teaching** (2013 - now)

- Hydraulic Engineering - BSc in Hydraulic Engineering , Water Resources University

**Teaching** (2019 - now)

- Fluid Mechanics - MSc in Water Technology , Vietnamese-German University

**M.Sc Thesis Supervisor**

- Riesmeier, A (2005): *Numerische Simulation der Strömungsprozesse in Deichen mit einem Zweiphasenströmungsmodell (in German)*.
- Sugimoto, T (2008): *Infiltration Study in Macro Porous Hillslopes with Geostatistical Analysis*.
- Phạm Ngọc Anh (2010): *Study on Discharge Capacity for Piano Key weir - Application in Van Phong project*.
- Bùi Đức Du (2010): *Study on flow through Sifon spillway in Cau Ong Dao project, Dalat city, Vietnam*.
- Nguyễn Quang Nghĩa (2010): *Study on High Velocity Flow in Chute - Application for Bung 2 spillway in Quang Nam province*.
- Phạm Văn Toàn (2010): *Using Clay Soil for River Dike Construction combined Road in Hau Giang province*.
- Phạm Thị Ngọc Hoa (2011): *Determination of Hydraulic Regime and Suitable Dissipation Solution for Ta Pao spillway*.
- Đào Việt Hưng (2012): *Determination of Suitable Dissipation Solution for Dakmi 2 spillway in Quảng Nam province*.
- Đinh Văn Duy (2012): *Flow-change due to sheet pile cofferdam instalation of Thu Bo barrier*.
- Cao Văn Chan (2014): *Determination of hydrodynamic load for flap gate operating system design based on numerical modelling and field measurement*.

- Nguyễn Thị Hà (2014): *Development of operation rule curve for Dau Tieng reservoir with emphasis on water supply and flood mitigation in downstream of Sai Gon river.*
- Nguyễn Thị Thảo Nguyên (2014): *Assessment of flow discharge through the Dau Tieng spillway on downstream of Saigon river – Propose flood mitigation solutions.*
- Cù Ngọc Thắng (2014): *Simulation of flow over a piano key weir using numerical and physical modelling.*
- Đào Đức Anh (2014): *Numerical simulation of flow through the Lybarinth weir – A case study of Phuoc Hoa spillway.*
- Hoang Kim Thi (2015): *Determination of suitable dissipation solution for large barrier - Cace study of Thu Bo barrier.*
- Phan Van Dung (2015): *Determination of soil bank erosion systems of Con Bung area, Thanh Phu district, Ben Tre province .*
- Le Ba Chinh Quyen (2015): *Influence of Rach Gia - Kien Giang sea dike system to Mekong delta flood regime.*
- Tran Viet Tien (2015): *Water supply for shrimp growing in coastline area of Mekong delta - Case study of shrimp growing area in Bac Lieu province.*
- Mai Ngoc Duc (2016): *Technical solution of fresh water reservoir for coastal area of Mekong delta.*
- Huynh Thanh Nguyen (2017): *A management solution for water supply system. A case study of project DMA Q6-100, District 6, Ho Chi Minh city.*
- Doan Duc Duy (2018): *Quality management solution for Dong Hung Thuan high school building construction of management unit Dist. 12 in Ho Chi Minh city.*
- Dang Minh Phap (2019): *Construction solution for soil bank erosion prevention and deposition in coastal area of Ghanh Hao, Bac Lieu province.*
- Pham Manh Hieu (2019): *Solution for improvement of supervisory consultant work at construction project of Tan Bien District Medical Center, Tay Ninh province.*
- Nguyen Quoc Bi (2019): *Application of hollow dikes solution combine with mangroves forest for protection of Western coast of Ca Mau province.*

#### **PhD Thesis Supervisor**

- Nguyen Thanh Phuong (2018 - 2022): *Identification of water sources adaptation areas for shrimp growing in Mekong delta.*

#### **PUBLICATIONS**

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1. Song Pham Van, Quang Thanh Dang, Thanh Dang Duc, Duong Tran Anh (2021): *Predicting water quality responses under climate change using coupled one- and two-dimensional models for Dong Nai River Basin*, Journal of Water Resources Science and Technology, ISSN: 1859-4255, Vol 62/02-2021
2. Song Pham Van, Hoang Minh Le, Dat Vi Thanh, Thanh Dang Duc, Ho Huu Loc, Duong Tran Anh (2020): *Deep learning Convolutional Neural Network in rainfall-runoff modeling*, Journal of Hydroinformatics, Vol. 23, <https://doi.org/10.2166/hydro.2020.095>
3. Song Pham Van, Xuan Bao Le, Ha Nguyen (2020): *Design a Real-time flood early warning system in the Dong Nai - Sai Gon river's lower basin*, Vietnam International Water Week 2020

4. Pham Van Song, Bui Thi Minh Ha, La Vinh Trung, Jean-Paul Vanderlinden (2019): *Vulnerability and flood risk analysis for urban area – A case study of Ho Chi Minh city*, 15th International Urbanization Conference: Urban Futures: Critical Transformation in Asian Cities
5. Tu Le Xuan, Thanh Vo, Johan Reyns, Song Pham Van, Duong Tran Anh, Thanh Duc Dang, Dano Roelvink (2019): *Sediment transport and morphodynamical modeling on the estuaries and coastal zone of the Vietnamese Mekong Delta*, Continental Shelf Research, Vol. 186, 64-76
6. Duong Tran Anh, Song Pham Van, Thanh Dang Duc, Long Phi Hoang (2019): *Downscaling rainfall using deep learning Long Short-Term Memory and Feedforward Neural Network*, International Journal of Climatology, DOI: 10.1002/joc.6066
7. Duong Tran Anh, Thanh Dang Duc, Song Pham Van (2019): *Improved rainfall prediction using combined pre-processing methods and feed forward neural networks*, J Multidisciplinary Scientific Journal, J2019, Vol. 2, Issue 1, 65 - 83, DOI: 10.3390/j20190006
8. Makoto Tamura, Kazuya Yasuhara, Kiyotake Ajima, Van Trinh Cong, Song Van Pham (2018): *Vulnerability of climate change and its adaptation in the Mekong Delta: Monitoring and residents' perception survey along the coastal area in Soc Trang province, Vietnam*, International Journal of Global Warming, Vol. 16, No. 1, 2018, p. 102 - 117, DOI: 10.1504/IJGW.2018.094312
9. Phạm Văn Song, Trinh Cong Van (2016): *Identification of water supply adaptation areas for shrimp growing in Mekong delta*, Proceeding of Annual Conference on Water Resources, Thuyloi University, ISBN:978-604-82-0066-4
10. Phạm Văn Song, Trinh Cong Van (2016): *Water supply techniques for intensive shrimp in Mekong delta*, Journal of Water Resources & Environmental Engineering, ISSN 1859-3941, Vol 55/10-2016
11. Pham Van Song (2014): *Diseases polluted water transport in a aquaculture system with water supply and drainage combined channel - Propose models for adaptation*, Journal of Water Resources & Environmental Engineering, ISSN 1859-3941, Vol 46/9-2014
12. Pham Van Song (2014): *Simulation of flow over piano key weir using numerical and physical model - Case study for Dakmi2 weir*, Journal of Water Resources & Environmental Engineering, ISSN 1859-3941, Vol 45/6-2014
13. Pham Van, S., & Cu, N.T. (2014): *Modelling of flow over piano key weir - Parameter studies using numerical and physical simulation*, 19th IAHR-APD 2014 Congress, September 21 - 24, 2014, WRU, Hanoi, Vietnam
14. Pham Van Song (2014): *Development of V-shape baffles of stilling basin for large tidal barrier - Case study for Thu Bo barrier*, Journal of Water Resources Science and Technology, ISSN: 1859-4255, Vol 22/10-2014
15. Pham Van Song & Dinh Van Duy (2013): *Change of flow regime during construction of Thu Bo barrier*, Proceeding of Annual Conference on Water Resources, Thuyloi University, ISBN:978-604-82-0066-4
16. Phạm Văn Song, Đặng Đức Thanh & Lê Xuân Bảo (2013): *Influence of flooding discharge for Dau Tieng spillway to Sai Gon river downstream*, Journal of Water Resources Science and Technology, ISSN: 1859-4255, Vol 19/12-2013
17. Vu Hoang Thai Duong & Pham Van Song (2012): *Dissipation design in downstream of Thu Bo barrier by numerical and physical model*, Journal of Water Resources & Environmental Engineering, ISSN 1859-3941, Vol 37/6-2012
18. Pham Van Song, Trinh Cong Van (2011): *Urban flooding in Ho Chi Minh city: Problems and solutions*, The 4th SEA-EU-NET Stakeholders Conference, Hanoi

19. Nguyễn Thanh Hải, Tăng Đức Thắng, Phạm Văn Song (2010): *Results of downstream transition of barrier in Mekong river delta*, Science and Technology Journal of Agriculture and Rural Development, ISSN 0866-7020, Vol.18/2010, pp 51-55
20. Nguyễn Thanh Hải, Tăng Đức Thắng, Đinh Sỹ Quát, Phạm Văn Song (2010): *Determination of discharge capacity through the piano key weir*, Science and Technology Journal of Agriculture and Rural Development, ISSN 0866-7020, Vol.17/2010, pp 41-44
21. Pham Van, S., Hinkelmann, R., Nehrig, M. & Martinez, I. (2011): *A comparison of numerical and experimental simulations of water-gas flow processes through dikes with fault zones*, Engineering Applications of Computational Fluid Mechanics Vol. 5, No. 1, pp 149-158
22. Pham Van, S. & Hinkelmann, R. (2008): *Development and comparison of different model concepts for two-phase flow in fractured-porous Media*. Progress Reports, Fachgebiet Wasserwirtschaft und Hydrosystemmodellierung, Technische Universität Berlin
23. Stadler, L., Hinkelmann, R., Helmig, R. & Pham Van, S. (2006): *A comparison of model concepts for macropore infiltration*, 6. Workshop - Poröse Medien -, Eberhard Karls Universität Tübingen
24. Pham Van, S., Stadler, L. & Hinkelmann (2006): *Comparison of a micro-scale and a meso-Scale model concept for two-phase flow in fractured-porous media*, XVI International Conference on Computational Methods in Water Resources, Copenhagen, Denmark
25. Rouault, P., Nehrig, M., Pham Van, S. & Hinkelmann, R. (2006): *Zerstörungsfreie experimentelle und numerische Untersuchungen zur Schwachstellenanalyse in Deichen*, Sicherung von Dämmen, Deichen und Stauanlagen - Handbuch für Theorie und Praxis, Vol. II, Eigenverlag des Instituts für Geotechnik und des Forschungsinstituts Wasser und Umwelt, Siegen, pp. 109-115
26. Pham Van, S. & Hinkelmann, R. (2005): *Case Studies on Water Infiltration Processes in the Unsaturated Zone with a Multi-dimensional Multiphase Flow Model*, 5th International Symposium on Management of Aquifer Recharge, Berlin, IHP-VI, Series on Groundwater No. 13, Recharge Systems for Protecting and Enhancing Groundwater Resources
27. Pham Van, S. & Hinkelmann, R. (2005): *Development and Comparison of Different Model Concepts for Two-Phase Flow in Fractured-Porous Media - Application to Water Infiltration Processes in Hillslopes*. Progress Reports, Fachgebiet Wasserwirtschaft und Hydroinformatik, Technische Universität Berlin
28. Pham Van, S., Busse, T. & Hinkelmann, R. (2004): *Modeling of Two-Phase Flow in Porous Media - Parameter Studies on Water Infiltration Processes*, 5. Workshop - Poröse Medien -, Eberhard Karls Universität Tübingen
29. Pham Van, S., Kobayashi, K. & Hinkelmann, R. (2004): *Numerical Simulation of Two-Phase Flow in Porous Media - Parameter Studies on Water Infiltration Processes in an Experimental Slope*, Young Water Research Journal, Vol. 1, pp. 58-64, YWAT, The Netherlands

## PROJECT RECORD

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### **Propose the solutions for erosion and deposition mitigation of Mekong river system in Vietnam (2017-2020)**

*Client:* Ministry of Science and Technology

*Assigned tasks:* Team leader, flow simulation and writing technical design reports

### **Design and Capacity Development for the Operation of the Real-Time Flood Early Warning System in the Dong Nai -Saigon River's Lower Basin (2016)**

*Client:* Ministry of Agriculture and Rural Development and Danish government

*Assigned tasks:* Team leader, flow simulation and writing technical design reports

**Development of Operation Rule Curve Research for Dau Tieng Reservoir in Sai Gon River (2013)**

*Client:* Ministry of Agriculture and Rural Development

*Assigned tasks:* Team leader, hydrological simulation and writing technical design reports

**Research on flood protection management for Dong Nai- Sai Gon river basin (2011-2013)**

*Client:* Ministry of Science and Technology

*Assigned tasks:* Project member, hydrodynamic modelling, hydrological simulation and writing hydrological reports

**Emergency preparedness plan for the downstream of Dau Tieng reservoir (2012)**

*Client:* World Bank

*Assigned tasks:* Project member, hydrodynamic modelling, hydrological simulation

**Flood damage assesment for Ho Chi Minh city under Dau Tieng dam-break conditions (2013)**

*Client:* WRU

*Assigned tasks:* Project member, hydrodynamic modelling, hydrological simulation

**Solution for Winter Wheat Production (2013 - 2015)**

*Client:* Ministry of Science and Technology

*Assigned tasks:* Team leader, hydrological simulation and writing technical design reports

**Research for Channel Separating Water Supply and Drainage Channels in the Aquaculture System (2009-2010)**

*Client:* Vietnam Academy of Water Resources - Ministry of Agriculture and Rural Development

*Assigned tasks:* Team leader of design hydraulic structures, hydrological simulation and writing technical design reports

**Sustainable Solution for Flooding Areas in Mekong River Delta in Viet nam (2000-2003)**

*Client:* Ministry of Science and Technology

*Assigned tasks:* Project member, hydrodynamic modelling, hydrological simulation and writing hydrological reports

**Detailed design of Thu Bo storm surge barrier under Ho Chi Minh city area flood protection project (2009-2011)**

*Client:* Ministry of Agriculture and Rural Development

*Assigned tasks:* Team leader of physical modeling packages

**Detailed design and construction drawings of Muong Chuoi storm surge barrier under Ho Chi Minh city area flood protection project (2011-2013)**

*Client:* ICMB9 - Ministry of Agriculture and Rural Development

*Assigned tasks:* Team leader of physical modeling packages

**Detailed design of surrounding dyke system for orchards combination with aquacultures in Quoi Thien, Vung Liem district, Vinh Long province (2009)**

*Client:* Vinhlong Department of Agriculture and Rural Development

*Assigned tasks:* Team leader of hydraulic structure design and hydrological simulation, in charge of calculations for hydraulic system works, writing design reports

**Survey and consultancy of water resources investment project for aquacultural activities in Thanh Binh – Quoi Thien isles, Vinh Long province (2012)**

*Client:* Vinhlong Department of Agriculture and Rural Development

*Assigned tasks:* Team leader of hydraulic structure design and hydrological simulation, in charge of calculations for hydraulic system works, writing design reports

**Survey and consultancy of water resources investment project for aquacultural activities**

**in Hieu Thanh, Hieu Nhon and Hieu Nghia communes, Vinh Long province (2012)**

*Client:* Vinhlong Department of Agriculture and Rural Development

*Assigned tasks:* Team leader of hydraulic structure design and hydrological simulation, in charge of calculations for hydraulic system works, writing design reports

**Construction infrastructures for large sample field of Tan An Luong commune, Vung Liem district of Vinh Long province (2013)**

*Client:* Vinhlong Department of Agriculture and Rural Development

*Assigned tasks:* Team leader of hydraulic structure design and hydrological simulation, in charge of calculations for hydraulic system works, writing design reports