



LSGI & RILS RESEARCH SEMINAR

Practical Methods for GPU-Based Map Rendering

 **6 MAY 2025 (TUE)**

 **4:30 - 5:30 PM**

 **Z414, POLYU**

 **MANDARIN**

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Professor

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ABSTRACT

The presentation focuses on GPU-accelerated map rendering techniques. While GPUs have evolved over decades to deliver superior efficiency, they are inherently designed for 3D scene rendering and are not naturally suited for 2D/2.5D map graphics. Specialized techniques are required to meet cartographic representation demands. This presentation will highlight three key research contributions in GPU-accelerated cartographic rendering: (1) A novel functional rendering method for line symbols that simultaneously addresses cross-tile width consistency and enables multi-symbol single-pass rendering; (2) An advanced texture-reinterpretation technique achieving scalable anti-aliased point symbol rendering and large-scale dynamic flow field visualization; and (3) A specialized underwater terrain rendering module featuring modern platform integration and GPU-optimized bathymetric contour generation. These developments significantly advance the state-of-the-art in computational cartography.

BIOGRAPHY

Prof. Wen Yongning is a professor at the School of Geography, Nanjing Normal University, China, where he serves as the Director of the Department of Geographic Information Science. His primary research areas include virtual geographic environments, geographic model resource sharing and services, and GIS algorithms and platforms. He is also a leading figure in the OpenGMS team and played a crucial role as a core architect in its platform design, contributing significantly to the development of this collaborative geographic modeling open-source framework. His work in this field was recognized as one of the Top Ten Research Progresses in Geoscience in China in 2022. He has led three projects funded by the National Natural Science Foundation of China (NSFC) as PI.

Moderator: Prof. Xintao LIU, LSGI

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