# LE XUAN HUNG, PhD

**Structural Bridge Engineer ▪ Engineering Software Developer**

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github.com/lxhungdp • lehung.dev

## Professional Summary

- Bridge engineer with 10+ years of experience designing and analysing steel, concrete, truss, and cable-supported bridges. Also worked on other steel structures and temporary works for bridge construction.
- Strong foundation in structural mechanics and finite element methods. Experienced in global and detailed modelling, nonlinear and dynamic analysis, staged-construction analysis, and seismic response of bridges.
- Developing bridge-design software since 2018. Use C/C++ for structural-analysis solvers, C#/.NET for desktop applications, and Python and TypeScript for engineering automation and web tools.

## Core Skills

- **Bridge design:** Steel bridges: steel I-girder and steel–concrete composite box-girder bridges. Concrete bridges: cast-in-place and precast girder bridges; segmental bridges built by balanced-cantilever and span-by-span methods. Cable-supported bridges: cable-stayed and suspension bridges. Arch bridges and truss bridges.
- **Other structures:** Steel structures, steel connections, and anchorages; temporary works for bridge construction, including scaffolding, falsework, formwork, and form travellers.
- **Development:** C and C++ for numerical solvers; C#/.NET and Visual Basic/VB.NET for desktop applications; Python; JavaScript/TypeScript with React and Node.js; VBA and MATLAB for engineering calculations; AutoLISP and AutoCAD .NET API for CAD automation; SQL and MongoDB; Git for version control.

## Selected Engineering Software

Project demos and details: github.com/lxhungdp lehung.dev.

- **PUS Pro Program**
  C#/.NET desktop application with an in-house FEM solver, code checks, calculation sheets, and quantity take-offs for steel–concrete composite box-girder bridges.
- **Scaffolding Designer**
  Desktop and web applications for pylon-mounted scaffolding used in cable-stayed bridge construction, with Anchor and Connection modules, real-time FEM analysis, code checks, and quantity take-offs.
- **Truss Bridge Designer**
  Desktop and web applications for automated truss-bridge design. Includes vibration analysis of steel truss footbridges, real-time FEM analysis, and code-based design checks.
- **Composite Bridge Designer**
  Desktop and web applications for automated design of steel–concrete composite I-girder and box-girder bridges. Includes Bridge Model and FEM Model modules, with a custom high-performance solver for moving-load analysis.
- **Reinforced Concrete Column Designer**
  Biaxial compression-bending design and capacity checks for reinforced-concrete columns.
- **Anchor Design**
  Tool for the design and verification of structural anchors.
- **CastControl**
  Web-based application for geometry control in short-line segmental bridge construction, automating the workflow from site survey submission through design review and approval to coordinate distribution.

*Design checks in these tools are based on AASHTO LRFD, Eurocodes, and KDS where applicable.*

## Professional Experience

**ENVICO Co., Ltd.** **Seoul, Korea**
*Deputy Project Manager & Engineering Software Developer* *Sep 2024 – Present*

**Key responsibilities**

- Lead engineering software development to convert the company's bridge-design workflows into software. Use AI-assisted development and check the engineering calculations and outputs.
- Perform complex structural analysis and design calculations for critical bridge structures, including seismic, nonlinear, and staged-construction analysis.

**Selected projects**

- *Automated scaffolding design workspace – Cable-stayed bridge construction.* FEM analysis, code checks, connection and anchor design, quantity take-offs, calculation sheets, and construction drawings.
- *South Commuter Railway (Philippines) – Prestressed segmental bridges.* Developed CastControl for segment geometry and tolerance checks, reducing manual engineering effort by up to 95%.
- *Saemangeum Ring Road TK project (Korea) – Composite steel I-girder spans and a cable-stayed bridge with a circular pylon.* Performed global modelling, detailed structural analysis, seismic evaluation, design calculations, and documentation for review.

**Wookyung Construction Co., Ltd.** **Seoul, Korea**
*Senior Structural Engineer & .NET Developer* *Sep 2018 – Sep 2024*

**Key responsibilities**

- Developed .NET-based applications to automate steel box-girder bridge design and verification, including calculation sheets, technical reports, and quantity take-offs.
- Analysed steel bridges and construction temporary works, including trusses, scaffolding, formwork, erection supports, and steel connections.

**Selected projects**

- *PUS Pro program – Prestressed composite U-type steel box-girder design and verification.* Developed a .NET desktop application for structural analysis and design checks, with calculation sheets, quantities, and technical reports.
- *Bridge Alignment – Bridge model generation.* Developed software to generate bridge models from horizontal alignment, vertical profile, and superelevation geometry.
- *Hyeongok 2nd Bridge, Ihwa–Samgye Road widening (Section 2) – Steel composite box girder.* Performed structural modelling and analysis, steel connection and formwork design, calculations, drawings, and review documentation.

**Hung Nghiep Construction Consulting Co., Ltd.** **HCMC, Vietnam**
*Structural Engineer* *Aug 2007 – Aug 2010*

**Key responsibilities**

- Conducted structural and staged-construction analysis for balanced-cantilever, precast and cast-in-place concrete, and temporary steel truss bridges.
- Used VBA, AutoLISP, and Mathcad to automate bridge-design calculations and prepare calculation sheets.

**Selected project**

- *An Nghia Bridge – Can Gio, HCMC.* Prepared detailed design and construction-stage analysis for balanced-cantilever construction.

## Education

**2012–2018** PhD Civil Engineering, Kyung Hee University
Research on bridge deflection and vibration reliability; peer-reviewed publications.

**2010–2012** MEng, Kyung Hee University

**2002–2007** BSc Civil Engineering, University of Communications and Transport, Vietnam