

Name NAKAMURA Shozo	Job Title Professor	Area of Expertise Design, Maintenance and Management of Steel Structures
1. Main Research Topics ① Maintenance of Existing Structures Through field surveys and remote monitoring of existing structures, combined cycle testing, etc., I am conducting research into deterioration prediction methods, remaining strength and remaining life assessments, correlation between environments and corrosion states, and durability assessments of various corrosion prevention methods. When serious damage is found in existing structures, I investigate its cause and develop countermeasures. I am also conducting research into the application of artificial intelligence (AI) to bridge design and inspection. Combined cyclic corrosion test Artificial neural network model ② Design Method of Steel Bridges I am conducting the following research on steel bridges using analytical methods such as the nonlinear finite element method. • Effect of initial deflection on the buckling strength of welded box section members • Stress concentration factors for fatigue design of concrete filled steel tubular (CFST) joints • Effect of hysteretic characteristics of seismic isolation rubber bearings on bridge response In addition, I am also conducting research into the rationalization of structures and design methods aiming at labor saving and cost reduction. An analysis result of a CFST K-joint ③ Development of an inspection robot for cables in cable-stayed bridges In order to dramatically improve the safety, efficiency, and economy of close-up visual inspection of cables, we developed a manually flying cable inspection robot for cable-stayed bridges that uses the cable as a guide, and applied it to inspect the cables of several actual cable-stayed bridges. Furthermore, in collaboration with other professors from the same graduate school, it was improved to an autonomous flying type, and also an image processing system that enables "splitting videos into still images and creating development diagrams" and "automatic detection of visible defects" was developed. We are currently investigating ways to expand the scope of application of this robot. Inspection robot		
2. Keywords Steel structures, Maintenance and management of bridges, Structural design		
3. Remarks and Websites I have experience working for a private company (Kawasaki Steel Corporation), so most of my research is relatively practical. I also strive to provide technical support to national and local governments as a member of several committees. researchmap: https://researchmap.jp/sh_nakamura_nu/ Laboratory: https://www.cce.nagasaki-u.ac.jp/~doku/		