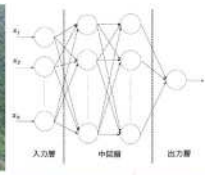
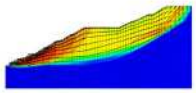
Name	Job Title	Area of Expertise
SUGIMOTO Satoshi	Associate Professor	Geotechnical Engineering

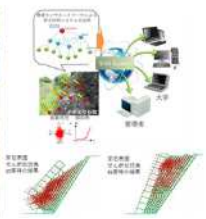
1. Main Research Topics


(1) **Research on evaluation of mechanical stability of slopes**

The purpose of this study is to develop an integrated solution system for slope disaster prevention. This is an attempt to estimate the ground information, determine whether monitoring is necessary based on the slope safety factor obtained from numerical simulation results based on the estimated ground information, identify locations where groundwater level and surface deformation should be monitored if necessary, and conduct field monitoring and data analysis based on these results in an integrated manner. The following are some of the examples of this project. We aim to elucidate the feasibility of a system that links three elements: (1) estimation and interpolation of ground information using AI technology, (2) seepage flow analysis and stability analysis of slopes applying the estimated ground information, and (3) remote monitoring based on the results of stability analysis.

(2) **Research on evaluation of mechanical stability of castle stonewalls**

The stone structures of castles, which are mainly composed of masonry walls, have been subject to collapse due to changes over time, which are believed to be triggered by large-scale earthquakes and repeated heavy rainfall in recent years. The stone structures of castles, which are mainly composed of blank masonry stonewalls, have been experiencing sudden collapses and deformation of the stonewalls due to changes over time triggered by large-scale earthquakes and repetitive heavy rains in some castles in Japan. Until now, the cultural value of these structures has been emphasized and there has been a tendency to be reluctant to reinforce and maintain them as structures, but the damage to Kumamoto Castle caused by the 2016 Kumamoto Earthquake has triggered calls for the restoration and repair of built stone structures from an engineering perspective. However, the mechanisms of the static and dynamic stability of these structures have not been clarified yet, and this study aims to clarify these mechanisms through the development and operation of a remote monitoring system for observing the deformation of built-up stone structures of castles, and through numerical simulations of stone wall models based on the discrete element method. The aim of this study is to clarify these issues through the development and operation of a remote monitoring system for observing the deformation of built-up stone structures of castles and through numerical simulation of stone wall models based on the individual element method.

(3) **Research on improvement of design values for ground anchors**

This research aims to improve the estimation method of circumferential frictional resistance of ground anchors in comparison with the existing design method for ground anchor construction. This research collects, organizes, and analyzes data from recent ground anchor construction projects, and proposes a new evaluation method for the frictional resistance τ of ground anchors. This will lead to appropriate maintenance and renewal of this method through effective use of ground investigation, improvement of design and construction quality, shortening of construction period, and cost reduction, aiming to extend the service life of the existing stock along roadside slopes.

2. Keywords

slope disaster / stonewalls / ground anchors / remote Monitoring / numerical simulation

3. Remarks and Websites

Since FY2023, I have overseen “Development of a method for extracting high-risk landforms for slope disaster prevention using new technologies” as one of the themes of “Construction of a smart infrastructure management system” under the Strategic Innovation Program (SIP: Phase 3) of the Cabinet Office. We are looking forward to hearing from you regarding joint research on the above-mentioned research themes.

researchmap: https://researchmap.jp/read0125663

Laboratory: https://www.cee.nagasaki-u.ac.jp/