# 11

Due to a variety of reasons such as industry characteristics and occupational characteristics, the contractor project managers of the construction industry have been in a state of serious job burnout. In order to explore the influencing factors of job burnout for project managers, this paper summarizes the antecedent variables in the past researches and conducts questionnaire design from the four dimensions of personal factors, job factors, organizational factors and social factors, then uses the association rule analysis method to find causality-based relationships. At the same time, through the mining of strong rules based on non-causality, this study draws a network of job burnout, explores the path of influence among different variables, and further proposes corresponding mitigation suggestions.

# 12

Housing plays an important role in **household's** investment behaviors under **incomplete financial market**. However, the role of housing **asset** in household portfolio choice and portfolio efficiency under uncertainty is largely omitted in existing research. Using a comprehensive micro database, this paper investigates the hedging role of housing asset under uncertainty in **transition economy** **like** China. Both income uncertainty and uncertainty of human capital expenditure are incorporated; meanwhile, household's asset allocation options and corresponding portfolio efficiency under such uncertainty are studied. Empirical findings **shows** that, housing plays a significant role in hedging uncertainty of future expenditure. When **face** higher income uncertainty, household will decrease the share of housing asset in total asset by increasing safe financial asset; while facing higher expenditure uncertainty will induce households to decrease the share of housing asset in total asset by purchasing new houses or increasing housing equity and decreasing risky financial investment. Finally, including housing as a hedging asset will reduce the stock market participation and thus **decreases** the portfolio effectiveness of risky assets.

# 13

Since congestion may occur when large pedestrian crowds attempt to evacuate, it is necessary to optimize the design of guidance facilities like moving sidewalks to reduce the cost of congestion and prevent stampedes.

In this research, we first build a continuous model under user equilibrium (UE), which can describe the interaction between pedestrian crowds and guidance facilities, and then establish an optimization design framework for the facilities. Our model is **a** mixed **integral** programming (MIP) with partial differential equation (PDE) **constrains**, which can be solved numerically with Lagrangian Relaxation (LR) and SO-MI algorithm based on finite element method(FEM). We tested the correctness and accuracy of our numerical results using **Anylogicsocial**-force simulation and duality theorem.

# 14

In recent years, building insulation technology has been widely used according to the energy conservation demand in various regions of China. It is of great significance to analyze the temperature field and temperature stress of the buildingexternal walland rooffor the durability and safety.In this paper,building external walland roof calculation units of the seven main climate regions in China wereconstructed. The finite-difference method was used to calculate and analyze the temperature field and temperature stress of the external walls of buildings with different insulation types**,** the results show that external insulation can increase the temperature stabilityand improve durabilityof the structural base layer, **and** put forward higher requirements for the performance of the protective layer.The temperature field and stress of the external wall and roof of buildings were compared and analyzed**,** the results show that building roof has greater temperature field and temperature stress variation in summer.To improve the safety performance of external wall insulation systems,the finite element model based on a wire mesh inserted polystyrene plate insulation system was established and the normal temperature stress and displacement of the wall surface in the form of external insulation were simulated**,** the results show that the wire meshand wire insertion can improve the safety of the building envelope by significantlyreducing the normal temperature stress and displacementof the external surface layer.

# 15

The energy underground structure represented by energy tunnels is a new type of underground structure **with** novel concept and energy saving as well as environmental protection. This paper takes the energy tunnel of the new Badaling Great Wall Station as the research background, and uses COMSOL Multiphysics software to perform numerical analysis on the heat transfer performance of the energy tunnel. The completed work mainly includes:

1. According to the actual situation of the new Badaling energy tunnel thermal performance test, a numerical model of the tunnel heat exchanger **was** established in COMSOL and compared with the measured data of Badaling thermal performance **test**. The minimum error between numerical simulation and measured data in **7 d** is only 2.32%, which **verify** the accuracy and reliability of the model**.**

2. A preliminary exploration of the applicable conditions and methods of the line heat source model for the energy tunnel TRT test is made, and a method for inversion of the comprehensive thermal conductivity of the surrounding rock using the T\_f-lnt curve is proposed for this model.

3. Six main parameters involved in the energy tunnel: Heat exchange tube spacing L, original geothermal temperature T\_o, inlet temperature T\_in, flow velocity v, comprehensive thermal conductivity of surrounding rock k, and comprehensive specific heat capacity of surrounding rock c, etc. **were** analyzed and discussed. **Study** the degree of influence of various parameters in the heat exchange process of energy tunnels to provide certain support for the design and construction of energy tunnels.

# 16

In this paper, wepropose a dynamic OD matrix estimation framework based on license plate recognition (LPR) data.

ABayesian-based path reconstruction model is first used to repair the vehicle missing information. Next, an initial OD demand reconstruction model fusing reconstructed path data with multiday raw LPR data is proposed, which infers theoriginal ODs of commuter vehicles and derive the initial OD matrix.Finally, based on the link flow, **left turning** flow, initial OD matrix and partial path flow information, the dynamic OD matrix is estimated using a bi-level programming extension (BLPE) model and a quadratic programming (QP) model.

The proposed framework is qualitatively validated using real-world LPR data collected in Langfang, and quantitively validated using a synthesized simulation data in a correspondingsimplified road network. The results show that the model can well estimate the OD demand distribution. The BLPE model has higher accuracy but lower computational efficiency. The QP model has higher computational efficiency, but the accuracy is insufficient. The two models can be used in different scenarios of traffic management.

At the end of the **article**, the prospects for future research are discussed.

# 17

The rapid development of undergroundtransit brings a lot of convenience to the city, but it also poses new challenges for the construction of nearby projects. During **excavation** of foundation pits, the existing tunnel structure will be affected by large or small due to the release of stress from the formation's own weight. Predicting the impact of excavation accurately on existing tunnels and understanding the mechanical mechanism correctly **is** of great significance for engineering practice. First, this paper describes the small-strain characteristics of soils and develops corresponding constitutive models. Then, a set of published centrifuge experimental data and **high-precision** triaxial tests **were** selected. The triaxial tests were used to obtain the model parameters and compared with the Mohr-Coulomb model commonly used in the geotechnical simulation. The results **showed** that the small-strain constitutive model can better describe soil responses under such conditions. Using the calibrated soil model, the parameter analysis of the effect of the excavation properties on the tunnel structure was carried out. Including the geometric properties of the pit (length and width), the distance from the bottom of the foundation pit to the tunnel, and the stiffness of the tunnel itself, t. **The mechanics of the mechanism** **were** discussed in the paper according to the simulation results. The results show that the three-dimensional effect of the foundation pit decreases as the pit increases along the length of the tunnel and can be treated as a plane strain problem when the length reaches 6 to 7 times the final excavation depth. The effect of excavation width on the displacement index is not monotonous, and there will be a maximumindex. As the tunnel depth increases, the tunnel lift will gradually decrease, and the **mechanical mechanism** of the tunnel deformation will change. Overall, the mechanism that causes tunnel uplift deformation can be divided into two kinds: overall structural deformation and sectional deformation. The overall structural deformation mainly includes the axial compression buckling and soil unloading uplift. Section deformation is mainly caused by lateral earth pressure.

# 18

The air-sea interaction has a great influence on the development of typhoon intensity. Studying the disturbance of the typhoon to the ocean is of great significance for typhoon intensity prediction. In this paper, an ideal typhoon represented by the maximum wind radius and the **center pressure** of the typhoon is constructed by using the Holland model. And this model is combined with the ROMS **mode** to simulate the ocean flow induced by **typhoon process**. We analyze the general rule of **typhoon** which in **the** both moving and static conditions, and then explore the influence of maximum wind radius, center pressure, and center moving speed. Results show that the typhoon process leads to horizontal circulation and vertical upwelling in the ocean, and causes the drop of the sea surface temperature. And the movement of the typhoon causes asymmetry in the flow, **thus** the flow on the right side can get enhanced. The radius of maximum wind, center pressure**,** center moving speed can affect the horizontal circulation, vertical upwelling, and influenced area, and most of the correlation curves can be simulated with simple functions.

# 19

As a vital source of water supply for a large population in East, Southeast and South Asia, the Tibetan Plateau (TP) is quite sensitive to climate change, reflected by changes in hydrological state variables such as lake water storage. The Qiangtang basin is the largest endorheic region in the TP, with approximately 300 lakes larger than 10 km2. Lake storage changes in the Qiangtang basin have received considerable **attentions** from the scientific community as an important indicator that reflects changes in the hydrological process in the cryosphere and its response to regional climate change. However, most areas in the Qiangtang basin lack in situ data due to complex terrain, relatively backward infrastructure, and **the** harsh environment. In this study, satellite altimetry for detecting lake water levels and a cloud computing platform (Google Earth Engine) for processing optical remote sensing images were jointly utilized to detect lake storage changes across 33 large lakes (> 100 km2) during 2000-2017. Results show that the total water storage of the studied lakes increased by 76.5 Gt, about twice the total storage capacity of the Three Gorge Reservoir, at a rate of 5.6 Gt yr-1 during 2000-2012 and a rate of 0.74 Gt yr-1 during 2012-2017. Field experiments were carried out in two typical lakes, including Lake Nam Co and Lake Yamzhog Yumco to evaluate different types of water index algorithms to extract water areas and to develop a thorough understanding of the **study** lakes. Based on the reliable lake water storage change series we developed, the hydrological process in the Nam Co basin was simulated using a distributed hydrological model CREST-snow coupled with a lake module so that CREST-snow can be successfully applied to the endorheic basins. Remotely sensed lake water storage changes were used to calibrate the model parameters in the poorly gauged Nam Co basin, achieving acceptable performance of the simulated lake water storage changes in Lake Nam Co with a correlation coefficient of 0.74 relative to the remotely sensed counterpart.

# 20

Drawdown condition is considered a main factor **to** the reduction in the stability of submerged slopes. In this paper, a device was developed to simulate the change of water level of the slope during centrifuge model **test**. A series of centrifuge model tests **was** conducted to explore the deformation and failure behaviors of the slope under drawdown **conditions**. Point couple analysis was applied to quantify the failure processes of the slopes. **Result** shows that the slopes exhibit a top-to-down progressive failure. The slope deformation induced by the drawdown is limited in a certain zone. Further study clarifies the local failure of the slope is caused by the **culmulative** growth of the deformation localization induced by drawdown. In turn, the local failure aggravates the growth in deformation localization. And it is the coupling processes of deformation localization and local failure that eventually lead to the slope failure. The deformation and failure behaviors of the slope overlying bedrock are similar to those of the pure soil slope. The failure mechanism could be extended to the slope with bedrock. The effect of the bedrock reflects in the extension of the slip surface, the overall increase of the **deforamation** and the decrease of the safety limit of the slope.

# 21

The specific sediment yield (SSY) is defined as the sediment yield per unit area. When using SSY to quantify terrestrial sediment load from a catchment, the inherent hypothesis is that the sediment yield scales with drainage area within homogeneous land surface regions and therefore the SSY is constant across spatial scales. However, frequently observed nonlinear relationships between the SSY and the drainage area suggest the breakdown of this hypothesis. This study analyzes the nonlinearity of the SSY **relation** through partitioning the sediment source area into channels and their contributing slopes. We hypothesize that the SSY associated with slopes is spatially homogeneous while the sediment load yielded from channels results in the nonlinearity. We tested the hypothesis using the Digital Yellow-River Model (DYRIM), a **physically based** distributed model of watershed sediment dynamics for the Loess Plateau. The annual sediment yield from the Huangfuchuan Basin, with a drainage area at the order of 3246 km2, was simulated and analyzed. We **observe** the SSY in two ways: along the **main stream** and by **Horton-Stralher** order. The simulation results confirm that erosion and deposition within the drainage channel system is the primary reason responsible for the nonlinearity of the SSY. The nonlinear relationship between the flow and sediment discharges as well as the thresholds of sediment supply and carrying capacity are the hydrodynamic mechanisms. We further analyze the spatial distribution of sediment yield processes, and obtain their **feathers** at different spatial scales. The results contribute to provide a physical interpretation of the nonlinear nature of SSY and highlight the channel processes which must be evaluated to estimate sediment yield.

# 22

In recent years, with the progress of the world of computer artificial intelligence and the development trend of digitalization construction, more and more people begin to pay close attention to how to in the construction field through the digital or artificial intelligence to generate urban planning and urban design. How to generate by means of pure digital urban planning is an issue in this paper, at the same time, also hope to go to build a set of can make the computer understand the logic of the city planning or system.

In this **article**, we designed a series of algorithms based on area feature extraction and analysis of the initial element, site of the original feature elements, mountain, light, water, green plant, etc., **to** set up a storage characteristic of **field** system, through our previous case survey data analysis **to** determine the town parameters relevant functional partition, and **to** integrate these data and a mathematical model of **markov** chain, the algorithm to iterate through the multi-agent system town of each grid point of **functional partition function** is generated by computer to town.