

JOB OPPORTUNITIES: POSTDOCTORAL POSITIONS

DTS: Environmental Systems and Performance

Preamble

1) Research Expertise & Foci areas

The research group Environmental Systems and Performance examines issues related to environmentally performative/sustainable building forms and systems in Asia, and in particular within the context of the Tropics. It researches on the relationship between human and natural landscapes, and on traditional and emerging technologies that will contribute to a new understanding of the human ecosystem.

In line with the abovementioned research group foci the Tropical Technologies Laboratory (T² Lab) was founded in April 2016 with the sponsorship of City Development Limited (CDL). The T² Lab encompasses various research interests relevant to the architecture and building in the Tropics. The current researches objectives are directed towards developing passive and active building technologies appropriate to Singapore and other equatorial regions in order to achieve low/zero carbon and sustainable buildings. Especial emphasis are given to the integration of solar panels and farming systems into modular building facades and their impact on natural cross ventilation, daylight and thermal comfort. Building integrated photovoltaics (BIPV), both on the facades and on the roof will also be tested for the especial conditions of a warm-humid equatorial climate. The lab also includes other researches focusing on building materials and technologies such as tropical timber.

2) Research Approaches

In order for the T² Lab to continue the current investigation lines and assure improvement and potential implementation of proposed ideas in actual residential buildings further studies should be incorporated by a post-doc researcher with a vast experience in building technologies, low-carbon and renewable energy strategies, as well as POE post occupancy study from the user perspective with regards to the environmental attributes for both health and wellness.

Duties and Responsibilities expected from the Post-Doc Candidate

- To conduct research on the development of future façade design for residential buildings which the aim of promoting carbon-neutral strategies in Singapore and Tropical regions.
- Monitoring experiments and conducting data analysis
- Elaboration of design proposals to improve current design in view of their applicability in actual buildings (retrofitting or new residential buildings)
- Post occupancy study on the human-oriented interface between building and users
- Writing research proposals, journal papers and organizing conferences and seminars.

Qualification & Requirements

- Background on Architecture and /Mechanical Engineer
- PhD topic related to sustainable/low-carbon architecture, building physics, renewable energy, advanced technologies in building facades, and POE studies
- Experience on building performance assessment and highly skilled on building simulation tools
- Experience on programing (optional)

DTS: Architectural and Urban Prototyping

Preamble

The research group Architectural and Urban Prototyping investigates agile iterative prototyping approaches for designing liveable environments, ranging from the building scale to the urban scale. It researches emerging computational generative and evaluative techniques for 1) discovering the relationships between built form and its environmental, social, and economic impacts, and 2) modelling, testing and evaluating different planning and design scenarios for optimal solutions, in particular within the context of high density Asian cities.

In order to support agile iterative prototyping approaches, the research foci areas are, among others, generative methods based on procedural and rule-based modelling applied to architecture and urban planning, interoperability of generative and evaluative tools and workflows operating at various urban scales, data interoperability between Building Information Models and CityGML city models, and data-augmented urban planning and design.

In the case of generative methods, the research group employs both procedural and rule-based approaches as well as hybrid approaches combining the strengths of both. For example, in collaboration with JTC, we are developing agile iterative urban prototyping approaches, exploring the application of a procedural modeller, Mobius, developed by Patrick Janssen, to generate alternative urban planning scenarios for the Jurong Industrial Estate in support of JTC's own work processes. In collaboration with researchers from UC Berkeley and U Cambridge (in the context of NUS's Global Alliance with both universities), we are exploring the integration of Mobius as a generative (and evaluative) tool with ViziCities as a visualization engine. We are also exploring linking these tools with spatial equilibrium models to incorporate human-centric parameters – such as well-being and social equity – to better forecast future urban development.

In order to support agile iterative prototyping approaches, we envision a larger ecosystem of generative and evaluative tools that can be connected within varying workflows in order to support a variety of urban planning processes. In this context, we propose the appointment of a Post-Doc researcher to explore the development and elaboration of this ecosystem of generative and evaluative tools integrating both Mobius and Vizicities and other evaluative methods and tools that have resulted from research at the Department of Architecture and the School of Design and Environment or are extensively used by its researchers.

Duties and Responsibilities expected from the Post-Doc Candidate

The successful applicant is expected to work closely with members of the Architectural and Urban Prototyping group, researching agile iterative prototyping approaches. This will include developing a computational ecosystem of generative and evaluative tools and, on this basis, support for initiating new projects, applying for research funds, producing joint publications, organising seminars and workshops, and seeking collaboration with industry partners for the application of the tools. The scope of work also includes assisting teaching of generative and evaluative tools in planning and design studios, lectures and seminars.

Qualification & Requirements

The candidate must have

- PhD in urban planning and design, preferably in the area of computer-aided urban planning and design and/or urban simulation and modelling
- Either practical work or research experience relating to urban planning and design of high density cities in Asia
- Familiar with GIS and related spatial modelling and analysis tools
- Familiar with basic programming with, e.g., Python, Java, and related tools
- Excellent communication and presentation skills in both speaking and writing

Landscape

Preamble

The primary geographic focus of Landscape Studies group in NUS is Asia, where culture, urbanization, economic development, coarse-scale environmental context, and increasing climate change act in concert to create a myriad of landscapes that shape the livelihood and well-being of large populations. Landscapes here can be conceived along multiple continuums, from rural to urban, social to ecological, natural to constructed, and intact to disturbed, which provide rich grounds for scholarly pursuits that are theoretical and applied in nature. Research of the Landscape Studies group is primarily focused on high-density urban regions, where the large majority of Asians live, but we also work in the transitional zones within the rural-urban continuum, where urban regions are expanding at a rapid rate into rural landscapes.

The research interest of the group is broad, but its overall aim *is to contribute to generating new knowledge of landscapes and the use of knowledge in governance systems and landscape design that improve the well-being of humans and which improve the ecological integrity of the environment.* Our current research covers the following broad areas:

- (1) Landscapes and health of urban populations
- (2) Spatial equity of landscapes
- (3) Landscapes as urban infrastructures, including urban agriculture
- (4) Landscapes and urban ecosystem services

The overall approach is both interdisciplinary and transdisciplinary. We are concerned with not just generating knowledge, but also applying the knowledge in practice and public policy. More specific approaches employed in research projects include landscape ecological methods of spatial analysis, remote sensing, ethnographic and other social science methods, design research, and physiological methods for studying plant interactions with the environment. We invite applicants to work with us on the topics above.

Duties and Responsibilities expected from the Post-Doc Candidate

The successful applicant is expected to focus on initiating new research projects, applying for research grants, and developing joint publications. Where timely, the successful applicant will also be asked to assist in organizing seminars and workshops and other minor administrative tasks from time to time. We also provide teaching opportunities as guest lecturers and studio reviewers in the Master of Landscape Architecture programme.

Qualification & Requirements

PhD in landscape architecture, urban design or urban planning (with focus on landscape for latter two), or other allied fields such as landscape ecology, urban ecology or environmental psychology.

URBAN – Emerging Urbanism in Asia

Preamble

Asian cities are at a crossroads. The ways in which we perceive and use, plan and build our cities need to be re-visited, re-considered and re-developed. Established norms, conceptions and systems need to be questioned and reflected. And new visions of urbanism for sustainable urban future in Asia need to be contemplated and developed. The pressing challenges for Asian cities in the rapid and intense urbanisation process require investigations from multiple perspectives and inter- and transdisciplinary collaborations.

With a comprehensive understanding of the complexity and distinctive characters of emerging urbanism in Asia, the vision of the group is to develop sustainable models and new strategies to cope with various environmental, social and economic challenges facing Asian cities and to achieve inclusive and shared prosperities. Emergent urban issues related to urban design, urban planning, quality of public space, urban sustainability, urban history and urban morphology are investigated through geographical, ethnographic, participatory, spatial analytical and historical approaches.

We invite applicants to work with us on one of the following topics that our current research covers.

Community & Participation

- Design for urban social sustainability
- Participatory community design & planning
- Community-centric & process-oriented design methods

Conservation & Regeneration

- Urban history & morphology of Asian cities
- Urban & rural regeneration in Asia
- Heritage conservation & heritage management

Ageing & Healthcare

- High-density urban environments for ageing
- Design for health and well-being
- Long-term care and health supportive environments

Urban form & Big data

- Urban form, street layout & their relations with formative processes of cities
- Measuring built form & its performance using smart open data
- Planning & design of public urban spaces for high-density cities

Resilience & Informality

- Planning & design for resilient development
- Urban informality & on-site renewal
- Spatial analysis on informal settlements

Design Section – Advance Practice

Preamble

The Advance Practice Group (APG) performs research through the practice of design rather than through traditional forms of writing. It links the importance of making architecture through drawing, prototyping, and innovative building with rigor, originality, and significance. Located strategically between the north south axis of urbanizing Asia and the east west line of the tropical equator, the Advance Practice Group researches three main themes:

- 1) the design contemporary spaces of living and production
- 2) the architecture of climatic calibration
- 3) the architectonics of technology, material and resources

Contextualized in the specific dynamic forces of the built environment in Asia and South East Asia, the shared ambition of the Advance Practice Group is to push the discipline of design through imaginative making, creating international impact. The aim of the design research is beyond normative practice, seeking advanced positions that challenge and push forward the very discourse of architecture itself.

Its members' achievements include:

- Design and research awards of international reputation
- Constructing and disseminating innovative design knowledge calibrated to the equator
- Promoting a network of practitioners and academics engaged in the research of design in Asia and in South East Asia.

This design knowledge is produced through a variety of traditional and contemporary modes including buildings, competition entries, speculative projects, photography, drawings, curatorial practice, films, photography and monographs.

With a focused outlook, the impact to the discipline of design is significant and robust stemming from the Group's unique position on the equator and from the region surrounding Singapore.

Duties and Responsibilities expected from the Post-Doc Candidate

The successful candidate is also expected to the initiation of new research projects, application of joint research grants, and developing joint publications, outreach, and dissemination for the Group. Experience of the transformation of design knowledge into text such as proposals, seminars, workshops, and publications is fundamental. S/he may also be asked to assist in organizing APG conferences.

Qualification & Requirements

PhD candidates with training in architectural and design practice, including research into transforming project based knowledge into synthetic and applicable research. Working knowledge of 3D modeling, 3D printing, and graphic platforms are appropriate. Experience in Asia and South East Asia will have an advantage including working knowledge of Mandarin, Malay and/or Bahasa.

History, Theory, Criticism - Asia and its Trajectories

Preamble

The History Theory Criticism (HTC) group develops critical capacities to examine questions of architectural identity, heritage, agency and architectural production within local/global contemporary milieu. Architectural history, theory and criticism operate as levers for intervening imaginatively with geopolitical and sociocultural contexts and collectives.

Working through Asia and its relational influence to/by other global regions, members work in interdisciplinary modes, combining research in the humanities with aspects of technology. The HTC research is collectively invested in issues concerning:

- architectural production (process/methods)
- representation (objects/artefacts)
- agency (subjectivity/voice)

The shared ambition of this group is to *build up competencies in discursive, theoretical and practical knowledges*, rooted in in-depth understanding of architectural histories and theories embedded in the contemporary Asian city's urbanized and globalized contexts. The aims of HTC research are to influence heritage governance and policies, increase public awareness of the built environment's historical values, and make implicit the connections between architectural histories and theories with architectural practice and design.

Its members' achievements include:

- developing new design and conservation approaches
- constructing new Asian knowledge bases in the architectural humanities, and
- promoting an international network of historians and theorists engaged in the research of Asian architectural humanities

The HTC members actively pursue discursive fronts through various media including text- and design-based discourses, curatorial practice, architectural design, architectural conservation, film, photography, object-making, and public advocacy. Their approaches are inter- and multidisciplinary.

Duties and Responsibilities expected from the Post-Doc Candidate

In particular, the successful candidate will be engaged in a current research/conservation project and publication revolving around monastic architecture of 10th-13th century China. The project requires an examination of the ancient monastery's structural and constructional systems, as well as a study of the societal/cultural forces that shaped its forms.

The successful candidate is also expected to have close engagement with HTC members. S/he will be involved the initiation of new research projects, application of joint research grants, and developing joint publications. S/he may also be asked to assist in organizing HTC seminars, workshops

Qualification & Requirements

PhD candidates with training in architectural history and theory, including extensive research in Buddhist architecture in northern China, and skills and practice in laser scanning of ancient buildings from the 10-11th century will have an advantage.

Appointment Details

Duration of Appointment

2 years. (Note: Candidate is expected to commence work starting 27th November 2017)

Application Deadline

Until the position is filled. Appreciate your understanding in advance that only selected qualified applicants will receive responses.

Compulsory Information to Include

In accordance with the Personal Data Protection Act (PDPA), please provide consent for the collection, use and disclosure of personal data, using the NUS Personal Data Consent for Job Applicants form.

For more information, please visit NUS > Careers > Academic Appointments.

Only shortlisted candidates will be notified.

Interested applicants, please send in the following documents to researchdoa@gmail.com

- Cover letter describing career goals and motivations
- CV
- Examples of two to three pieces of scholarly writings
- Other forms of research work
- 3 recommendation letters

The National University of Singapore is a research-active university that offers an attractive employment package. Appointees will find, within the Department, a stimulating and well-resourced environment to pursue innovative and multi-disciplinary designs backed up by research that addresses the needs and conditions in Asia.