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**Headline: Living Analytics Research Centre receives \$25 million from National Research Foundation to fund second phase of research**

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The Living Analytics Research Centre (LARC) of Singapore Management University (SMU) in partnership with USA's Carnegie Mellon University (CMU) has received a second round of funding from the National Research Foundation (NRF) for a period of 4.5 years until 2021.

The \$25 million grant for LARC Phase 2 (LARC2) will enable the centre to undertake research, development and deployment partnerships to innovate analytic methodologies, technologies and system platforms that would support Singapore's Smart Nation efforts.

Professor Lim Ee-Peng, SMU Director of LARC said, "Combining analytics R&D in areas such as community liveability, urban mobility, jobs/skills intelligence, and healthy lifestyle to enhance people's well-being is an exciting direction for LARC2. It aligns very well with SMU's ambition to make high-impact contribution to people and society, and supports our Smart Nation drive to leverage data and technology to create conveniences for citizens, enterprise efficacy and opportunities for all. We look forward to strong collaboration with our public sector partners and CMU."

"Carnegie Mellon University is committed to developing research initiatives to create smart solutions to some of society's greatest challenges," said Mark Kamlet, CMU Director of LARC. "Through LARC Phase 2 (LARC 2) and our collaboration with SMU, we are excited to continue generating and implementing those solutions in the hopes of improving the lives of individuals throughout the world."

### **Personalised and participatory Smart Nation**

Data intensive analytics technologies will enable societies to become increasingly more personalised, where technology-driven solutions and services are created and customized to individual preferences, profiles and activities. The same technologies will also allow people to be more participatory, engaging in crowdsourcing activities to enhance their well-being in a digitized society.

By conducting research on machine learning, deep learning, and crowdsourcing across social/urban platforms as well as applying them to urban/social sensing, socio-physical analytics and social activation tasks in smart nation application domains, LARC2 aims to harness insights from big data to create intelligent personalized services to help individuals cope with social and urban challenges. By analysing people's behaviour in both social and urban context, LARC2 also aims to help individuals change their behaviour in activities that improve personal and social well-being.

### **Research focus**

LARC2 will focus on three research areas:

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- **Urban and Social Sensing** – technologies to gather and integrate urban data from existing urban infrastructure and services, and social media data so as to enhance liveability. Research topics include Social Media, Urban Sensing, and Crowd Sensing.
- **Socio-Physical Analytics** – analytics that fuses both social and urban data to create new insights both about individual activity patterns/preferences and the overall functioning of urban infrastructure. Research topics include Urban Behaviour Analytics, Urban Context Analytics, and Event Detection & Understanding.
- **Social Activation** –delivering interventions to affect user behaviour, at individual or societal level, to achieve social objectives (e.g., a cleaner environment, healthier food choices, etc.). Research topics include Personalised Recommendation, Social Crowd Tasking, and Personalised Assistance & Planning.

### **Research application**

The research will be applied in four areas, in line with national priorities:

1. **Urban and Community Liveability** – Analysis of social and urban data contributes to a good understanding of public feedback and consumption of urban and social services. These analysis results facilitate the development of new personalized and context-aware platforms that engage members of the public to help improve delivery of municipal services and promote general well-being in urban and social spaces of Singapore.
2. **Jobs and Skills Intelligence** – workers in Singapore will face several significant technological shifts during their professional career, and will thus need to retrain and reskill themselves to adapt to changes in economic and employers' needs. One research project is to develop the framework and data analytics capabilities to profile jobs and skills, and to use the insights to help Singapore's workforce cope with job and skill disruptions. In this project, LARC researchers will develop methods for analysing job/skill data, developing job/skill knowledge networks, personalising job recommendations and career planning.
3. **Personalised Urban Mobility** – In addition to central planning of public transport system for more efficient and smoother commuting, there is a need to personalise public transport services to meet individual mobility needs, and to promote usage of public transport services to optimise sharing of resources. One research application project is the study of the important factors (e.g., comfort, convenience, reliability and speed) that directly affect people's decisions on the choice of transport mode, to uncover the major stumbling blocks that prevent commuters from taking public transport, to develop data driven approach to enhance urban mobility, and to provide personalized recommendation on public transport based on real-time urban sensing data and individual commuter's preferences and needs.
4. **Smart Consumption and Healthy Lifestyle** – A significantly greater proportion of Singaporeans will transition to white/gray collar service sector jobs, with longer working hours and a more sedentary lifestyle. Public and private sector companies will have to create innovative and intelligent services that promote a healthier lifestyle, as well as simplify the lifestyle decisions an individual needs to make. One research project is to develop an integrated personalised diet and intervention system to help individual users easily track their own food consumption and provide personalised recommendations to enable them to lead a sustained healthy lifestyle.

### **Research collaborators**

To achieve greater societal impact in research, LARC2 will collaborate closely with public and private partners to create deployment test beds, repurpose their existing data to solve new problems, and develop innovative services to help individuals enjoy an improved experience with our urban systems such as public transport and municipal services. The external partnerships include Municipal Services Office and Health Promotion Board.

LARC2 will also collaborate with and leverage the expertise of various labs and research centres within SMU, including LiveLabs Urban Lifestyle Innovation Platform, Fujitsu-SMU Urban Computing &

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Engineering Corporate Lab, and SMU-TCS iCity Lab. Besides strategic partner CMU, LARC2 will collaborate with other international universities and labs so as to achieve more research breakthroughs together.

In addition, LARC2 will work closely with the Center for Applied Smart-Nation Analytics (CASA), newly-established at SMU and funded by NRF, to increase the translational value of its research. CASA will be able to provide the engineering expertise to further develop LARC2 analytics research demos into full-fledged systems for trials and deployment.

Besides faculty members, data scientists, engineers and researchers, LARC2 projects will involve SMU and international doctorate, master, and undergraduate students.