SW7

Job Vacancy: Research Director/Senior Researcher in Artificial Intelligence and Cryptography

The SW7 Group is a deep technology business specialising in the development, application and commercialisation of mathematical and computational technologies in the spheres of machine learning, artificial intelligence, prediction and cryptography. The business was founded by two former Goldman Sachs partners and an eminent mathematics professor and has offices in London, Hong Kong and Singapore,. The firm currently runs a systematic investment management business, powered by its proprietary algorithmic technology; is active in applying its AI/ML algorithmic technology more broadly across non-financial services industries (for example, biomedicine and telecommunications); and is expanding fast in to the world of cryptography and blockchain through, for example, its own patent-pending technology.

We are looking for exceptionally intelligent, intellectually curious and dedicated PhD graduates to conduct research in the areas of artificial intelligence and cryptography, as described in greater detail below. Raw intelligence, the ability to develop original ideas and palpable interest in the research areas listed below are the key selection criteria. Successful candidates will work directly with our Chief Executive and current senior research team, with exposure also to SW7's non-research team. Job location will Hong Kong.

Detailed potential research areas are as follows:

Research Area 1: Combinatorial Optimisation (CO)
Research focus: theoretical algorithm design, problem relaxations, exact solutions to problem approximations as opposed to approximate solutions to exact problems
Application area: CO applications to AI and Real Options

Requirements:
General level of knowledge: familiar with standard content such as Korte/Vygen Combinatorial Optimisation
PhD thesis needs to demonstrate strong originality.
Coding Skills: Proficient for scientific use

Research area 2: Information theory, Algo Information Theory, Signal processing
Research focus: Compression, state space mapping, image and speech processing
Application area: Development of advanced AI and Machine Learning applications

Requirements:
General level of knowledge: David MacKay (Information Theory, Inference and Learning Algos), Chaitin (Algorithmic Information Theory)
PhD thesis: can be very applied or very theoretical
Coding skills: proficient for the development of robust / production ready code; C++ needed.

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Research Area 3: Theoretical Cryptography

Research focus: zero knowledge proof systems, quantum cryptography, number theory
Application area: Development and implementation of advanced cryptographic protocols for decentralised privacy management

Requirements:
General level of knowledge: familiar with standard content such as J Buchmann (Intro to cryptography), Schneier: Applied cryptography PhD thesis needs to demonstrate strong originality
Coding skills: proficient for scientific use

Research Area 4: Applied cryptosystems and implementations, including blockchains

Research focus: System architecting for commercial standard implementations of proprietary cryptographic protocols
Application area: Development and implementation of advanced cryptographic protocols for decentralised privacy management

Requirements:
General level of knowledge: Understanding of architecture of all major blockchain types, applied cryptography (Schneier)
PhD thesis should give a sense of the architecting competence
Coding skills: highly proficient across platforms

Research area 5: DevOps

Application area: Delivering firmwide architectures across AI and cryptographic applications
Research focus: UI design and deployment, blockchain, distributed computing, parallelisation

Requirements:
Experience in DevOps or similar software engineering role

If interested, please contact:

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