Hao Tan

Curriculum Vitae

Evolving Machine Intelligence Group
Department of Computer Science and Engineering
Southern University of Science and Technology
Shenzhen, Guangdong, China
+(86) 135-3031-7791
tanbox@live.com

Research Interests

theme: Representation Learning

Neural Architecture Search

auxiliary: Swarm Intelligence

Education

2021 – now **Doctor of Philosophy**, *School of Computing*, University of Leeds, UK.
Supervisor: Prof. *Mohammad Nabi Omidvar*

Joint Ph.D program, *Department of Computer Science and Engineering*, Southern University of Science and Technology, China.
Supervisor: Prof. *Ran Cheng*

2016 – 2020 **Bachelor of Engineering**, *Department of Computer Science and Engineering*, Southern University of Science and Technology, China.
Main Coursework: Mathematical Analysis I (89), Linear Algebra I (92), Computer Programming Fundamentals (91), Design Engineering (89), Computer Networks (86), Advanced Computer Science Experiment II (88), Software Engineering (87), Intelligent Robotics (86).
Undergraduate Thesis: Neural Architecture Search Based on Differential Evolution.

Working Experiences

2020 – 2021 **Research Assistant**, *Department of Computer Science and Engineering*, Southern University of Science and Technology, China.
Research Grants:
- 2020-2022: Evolutionary Computation Based Deep Neural Architecture Search for Microchips, **Key Member**, RMB $1,280,000$, Huawei Hisilicon, China.
- 2020-2023: Cell-Based Deep Neural Networks Architecture Search Using Evolutionary Multiobjective Optimization, **Key Member**, RMB $230,000$, National Science Foundation, China.

Publications and Patents

Refereed Journal Articles

TNNLS **Hao Tan**, Ran Cheng, Shihua Huang, Cheng He, Changxiao Qiu, Fan Yang, Ping Luo. Relative-NAS: Relative Neural Architecture Search via Slow-Fast Learning. IEEE Transactions on Neural Networks and Learning Systems, 2021 (in press). (SCI IF=10.451)
- Proposed RelativeNAS method using slow-fast learning, which performed joint learning between fast-learners and slow-learners in a pairwise manner.
- Spent only nine hours with a single 1080Ti GPU to obtain the discovered cells and achieved state-of-the-art results on image classification tasks.
- The discovered cells obtained on CIFAR-10 being directly transferred to object detection, semantic segmentation, and keypoint detection, which still yielded competitive results.

SWEVO Cheng He, **Hao Tan**, Shihua Huang, Ran Cheng. Efficient Evolutionary Neural Architecture Search by Modular Inheritable Crossover. Swarm and Evolutionary Computation, 2021 (in press). (SCI IF=6.912)

Conference Proceedings

BIC-TA 2019 **Hao Tan**, Cheng He, Dexuan Tang, Ran Cheng. Efficient Evolutionary Neural Architecture Search by Modular Inheritable Crossover. International Conference on Bio-inspired Computing: Theories and Applications, Zhengzhou, China, November 2019.

- Proposed an efficient evolutionary NAS method using a tailored crossover operator, which enabled the offspring network to inherit promising modular from their parent networks.
- Conducted experiments with the results on CIFAR-10 in comparison with state-of-the-art NAS methods, and validated the effectiveness of our proposed modular inheritable crossover operator.

Patents

Ran Cheng, **Hao Tan**, Cheng He, Zhanglu Hou, Changxiao Qiu. A Neural Architecture Search Method and System based on Evolutionary Learning. International Patent, PCT/CN2020/136950, filed Jan. 4, 2021.

Professional Services

Reviewer of Journals

IEEE Access

Applied Soft Computing

Complex & Intelligent Systems

Awards

2019 **Best Paper Award** of 14th International Conference on Bio-inspired Computing: Theories and Applications (BIC-TA 2019), Zhengzhou, China.

Computer skills

Programming: Python, JAVA, MATLAB

OS: MacOS, Microsoft Windows, Linux

Scientific: PyTorch, MATLAB

Typography: LaTeX, Microsoft Office

Languages

Mandarin **Mothertongue**

English **Intermediate**

IELTS: Overall: 6.5, Listening: 6.0, Reading: 7.5, Writing: 6.0, Speaking: 6.0

References

Mohammad Nabi Omidvar
Assistant Professor
School of Computing, University of Leeds, UK
Phone: (+44) 113 343 5450 | E-mail: m.n.omidvar@leeds.ac.uk

Ran Cheng
Associate Professor
Department of Computer Science and Engineering, Southern University of Science and Technology, China
E-mail: ranchengcn@gmail.com