Wang Ruixiang Personal Website

+65-80675623

National University of Singapore e1331098@u.nus.edu/ruixiang_wang@foxmail.com

Computer Science (Artificial Intelligence) Github Repository

School of Computing linkedin.com/in/ruixiang-wang-7971002ba

Availability: May 2024 onwards (Internship)/May 2025 onwards (Full-Time Job)

Education Experience

•SCHOOL OF COMPUTING, NATIONAL UNIVERSITY OF SINGAPORE *Jan 2024 - Present*

Master of Computer Science (Artificial Intelligence) (expected graduation: May 2025) Singapore

– Core courses: AI Planning and Decision Making, Uncertainty Modelling in AI, Natural Language Processing...

•SCHOOL OF SOFTWARE, NORTHEASTERN UNIVERSITY(CHINA) *Sep 2019 - Jun 2023*

Bachelor of Software Engineering Shenyang, China

– 4.17/5; Ranked top 5% in grade

Internship and Work Experience

•Xiaomi Technology Co. Ltd. *July 2023 - Dec. 2023*

Software Engineer with artificial intelligence(Full Time) Shanghai, China

– **Duties**: Aimed at predicting handwritten text via smartphone touchscreens, focusing on algorithmic applications.
– **Techniques**: Utilized advanced convolutional neural networks, including EfficientNet and ResNet, for superior image-based feature extraction, boosting handwritten text recognition accuracy.
– **Techniques**: Employed TF-Lite for algorithmic hardware acceleration, enhancing execution speed and ensuring immediate prediction capabilities.
– **Attainments**: Boasted a 98.18% accuracy in handwritten text predictions, alongside a significant 28.54% model size reduction and a 22.71% improvement in response time, making it suitable for mobile deployment.

•DuoYi Networks Co. Ltd. *Oct 2022 - Jan. 2023*

Artificial Intelligence Software Engineer (Intern) Guangdong, China

– **Duties**: Engaged in advancing deep learning for RAW image recognition, focusing on the quad-channel (R, G1, G2, B) RAW data processing.
– **Techniques**: Crafted an enhanced convolutional network model, rooted in ResNet architecture, tailored for RAW's quad-channels, incorporating attention mechanisms for superior feature discernment.
– **Attainments**: Achieved a 93.47% mean Average Precision (mAP) across extensive datasets.

•Neusoft Education Technology Co. Ltd. *May 2022 - July 2022*

Artificial Intelligence Algorithm Engineer (Intern) Shenyang, China

– **Duties**: Orchestrated the development and deployment of an advanced Intelligent Credit Assessment and Fraud Prevention (ICAFF) system to bolster financial security and thwart fraud.
– **Techniques**: Leveraged TensorFlow and LSTM networks for sophisticated analysis of consumer credit data.
– **Techniques**: Optimized deep learning parameters using Genetic Algorithms (GA) and employed Node Embedding (NE) for social network structure analysis.
– **Attainments**: Elevated credit model accuracy by 5.26%, decreased credit default forecast error by 3%, and boosted fraud detection efficiency by 10.35% through innovative social network analytics.

Academic Projects

•Score-Based Diffusion Models Project *Mar 2024 - May 2024*

Mentor: Associate Professor Harold Soh Soon Hong National University of Singapore, Singapore

– **Duties**: Advanced the performance of generative models in creating samples and accurately computing log-likelihood via Continuous Normalizing Flows (CNFs).
– **Techniques**: Applied Stochastic Differential Equations (SDEs) for progressive data-to-noise distribution transformation. Integrated importance sampling to mitigate variance from likelihood weighting.
– **Attainments**: Realized a peak model efficiency with a negative log-likelihood of 2.79 bits/dim on the CIFAR-10.

•Quantitative Financial Analysis and Risk Prediction (QFARP) Project *Dec. 2023 - Feb. 2024*

Mentor: Professor You Yang National University of Singapore, Singapore

– **Duties**: Spearheaded the development of a precise stock market forecasting tool, aimed at discerning and prognosticating individual stock and index trends for quantitative trading enhancement.
– **Techniques**: Employed SegRNN, integrating multi-faceted market metrics like Volatility Index (VIX), and news comprehensive sentiment analysis and forecasting of S&P 500 and NASDAQ historical data.
– **Attainments**: Reduced Mean Squared Error (MSE) by 4.11% with the SegRNN framework on pivotal financial time series datasets, including Yahoo Finance's historical price archives.

•Incremental Learning and Meta-Learning (IML) Project *May 2021 - Jun. 2023*

Mentor: Associate Professor Mao Keming Northeastern University, China

– **Duties**: Pursued advanced studies in incremental meta-learning for image recognition, aiming at crafting systems with continuous learning capabilities from new data.
– **Innovations**: Developed the DCBIL framework, utilizing a novel Bidirectional approach for processing data streams.
– **Innovations**: Introduced the SAILM technique, inspired by the Reptile strategy.
– **Attainments**: Achieved a minimal computational overhead of 4.55% per new category on Tiny ImageNet, surpassing traditional models by 5.16%, 5.92%, and 7.4% on Tiny-ImageNet, CIFAR-10, and CIFAR-100 datasets, respectively.

•**Natural Language Understanding and Generation System (NLUG) Project** *Jan 2021 - Mar. 2021*
Mentor: Professor Thomas Sauerwald Cambridge University, United Kingdom

– **Duties**: Targeted to improve text comprehension and production accuracy.
– **Techniques**: Adopted DistilBERT, a streamlined Transformer model, balancing reduced complexity with efficiency.
– **Innovations**: Pioneered cross-lingual knowledge adaptation, fine-tuning on minimal target language data.
– **Attainments**: Marked by a 7.82% uplift in user satisfaction metrics.

Abilities and Skills

- **Language Abilities**: English, Chinese, Japanese
- **Programming**: Python(Pytorch, Tensorflow), JAVA, Java Script, C/C++, Swift, Objective-C
- **Other Technical Skills**: Operating Systems(Windows/Ubuntu/Android), Web/APP development, Embedded Systems(Arduino/ARM/RISC-V), SDLC, Deep Learning Algorithms.

Honors ,Prizes and Achievements

- **Honors**: National Scholarship(2020), National Scholarship(2021), Outstanding Student Pioneer
- **Prizes**: TRIZ Cup Innovation Competition($2^n d$), Blue Bridge Cup Programming Competition($2^n d$)
- **Papers**: Application of Diagram Image Classification Based on PCBMER (EI) (Link),Discrimination Correction and Balance for Class-Incremental Learning (EI) (Link), Prototype Representation Expansion in Incremental Learning (SCI) (Link)
- **Patent**: Robotic Arm (Desgin Patent - ZL 202230694683.0)(Link), A Method of Device Control (Invention Patent)
- **Software Copyright**: Intelligent Human Condition Monitoring Management System (2023SR0028826)

王瑞翔 个人主页

新加坡国立大学
计算机科学 (人工智能)
计算机学院
寻找机会: 2024年五月开始(实习)/2025年五月开始(全职工作)

+65-80675623 / +86-18540298711
e1331098@u.nus.edu/ruixiang_wang@foxmail.com
Github 仓库
linkedin.com/in/ruixiang-wang-7971002ba

教育经历

•新加坡国立大学计算机学院 *2024年1月 - 至今*
计算机科学硕士（人工智能方向）（预计2025年5月毕业） 新加坡
– 核心课程：AI规划与决策制定，不确定性建模在人工智能中的应用，机器学习理论与算法，计算机视觉与模式识别，自然语言处理，概率图模型，量子计算。

•东北大学（中国）软件学院 *2019年9月 - 2023年6月*
软件工程学士 中国沈阳
– 4.17/5; 年级排名前 5%

实习及工作经验

•小米科技有限责任公司 *2023年7月 - 2023年12月*
人工智能软件工程师（全职） 中国，上海
– **职责**：主导手写文字预测项目，专注于手机触摸屏算法的应用。
– **技术点**：运用改进型卷积神经网络（如EfficientNet和ResNet）进行图像特征提取，增强手写文字的识别准确性。
– **技术点**：实现算法的硬件加速，采用TF-Lite技术优化算法的运行速度和响应时间，确保实时预测性能。
– **成果**：模型优化后，手写文字预测的准确率提高至98.18%。通过模型轻量化，实现了算法在移动设备上的部署，模型大小减少了28.54%，响应时间加快了22.71%。

•多益网络有限公司 *2022年10月 - 2023年1月*
人工智能软件工程师（实习生） 中国，广东
– **职责**：专注于深度学习算法在RAW图像识别的应用，尤其是在处理RAW图像数据四通道（红、绿1、绿2、蓝）。
– **技术点**：基于ResNet，特别针对RAW数据的四通道,开发深度卷积网络，使用注意力机制进行特征提取。
– **技术点**：利用PFLD（Practical Facial Landmark Detector）算法，结合关键点检测技术，提高了对图像中面部特征的识别能力，即使在复杂光照和遮挡情况下也能维持高准确度。
– **成果**：改进了RAW图像四通道数据处理的模型，在综合图像数据集上的平均检测准确率（mAP）提高至93.47%。

•东软集团教育科技有限公司 *2022年5月 - 2022年7月*
人工智能算法工程师（实习生） 中国，沈阳
– **职责**：负责开发与实施用于金融服务的智能信用评估与欺诈预防平台 (ICAFF)，同时探测和预防潜在欺诈行为。
– **技术点**：运用深度学习框架如TensorFlow和长短时记忆网络(LSTM)，对消费者信用数据进行分析。
– **技术点**：实施遗传算法(GA)以优化深度学习模型参数，引入节点嵌入技术(NE)分析社交网络结构。
– **成果**：信用评分模型的准确率提高了5.26%，降低了信用违约的预测误差3%左右。利用社交网络分析技术，欺诈检测速度提高了10.35%。

学术项目

•基于分数的扩散模型（Score-Based Diffusion Models）的研究项目 *2024年3月 - 2024年5月*
指导：*Harold Soh Soon Hong*副教授 新加坡，新加坡国立大学
– **职责**：负责提高生成模型在样本合成方面的效能，并能够通过连续正规化流（Continuous Normalizing Flows, CNFs）来可追踪地计算模型的对数似然（Log-Likelihood）。
– **技术点**：利用随机微分方程（Stochastic Differential Equations, SDEs）将数据分布逐渐转化为噪声分布。引入重要性采样技术来降低目标的方差，这一步骤是为了适应似然权重引入的高方差。
– **成果**：在CIFAR-10数据集上，最佳模型达到了2.79bits/dim的负对数似然。

•量化金融行为分析与风险预测 (QFARP)项目 *2023年12月 - 2024年2月*
指导：*You Yang*教授 新加坡，新加坡国立大学
– **职责**：负责构建一个高精度的股市预测模型，分析和预测个股及市场指数的走势，为量化交易提供数据支撑。
– **技术点**：运用分段循环神经网络（SegRNN）,结合交易量、波动率指数（VIX）、市盈率（P/E ratio）等多维市场指标，以及新闻情感分析对标普500指数（S&P 500）和纳斯达克（NASDAQ）的历史行情数据进行分析预测。
– **成果**：在标准金融时间序列数据集，如雅虎金融（Yahoo Finance）提供的历史价格数据上，SegRNN模型对未来市场走势的预测MSE下降了4.11%。

•增量学习与元学习(IML)项目 *2021年5月 - 2023年6月*
指导：毛克明副教授 中国，东北大学
– **职责**：研究图像识别领域的增量元学习研究项目，致力于开发能够适应新数据并持续学习的智能系统。
– **创新点**：提出了深度卷积双向长短期记忆网络方法，处理连续数据流并增强模型对新信息的适应能力，以此为基础开发了DCBIL模型。
– **创新点**：借鉴元学习中的Reptile方法，创新发明了结构化自适应增量元学习方法，被称为SAILM。
– **成果**：实现了在Tiny ImageNet上每增加一个类别只需额外增加4.55%的计算成本，且在Tiny-ImageNet、CIFAR-10和CIFAR-100数据集上取得比传统方法5.16%,5.92%,7.4%的提升。

•自然语言理解与生成系统(NLUG)项目 *2021年1月 - 2021年3月*
指导：*Thomas Sauerwald*教授 英国，剑桥大学
– **职责**：领导一个五人小组完成自然语言理解与生成系统 (NLUGS)，致力提升文本理解和生成的准确性及流畅性。
– **技术点**：引入轻量化Transformer变体————DistilBERT，减少模型参数量同时保持性能。
– **创新点**：实现跨语言的知识迁移，通过少量目标语言数据进行微调，增强模型在多语言文本上的泛化能力。
– **成果**：成功部署到多个语言版本的客户服务聊天机器人中，实时反馈指标显示用户满意度提高了7.82%。

能力与技能

- **语言能力**:英语(IELTS-6.5)、中文(母语)、日语(N4)
- **编程技能**:Python（包括Pytorch, Tensorflow框架），JAVA，JavaScript，C/C++，Swift，Objective-C
- **其他技术技能**:操作系统（Windows/Ubuntu/Android），网络/APP开发，嵌入式系统（Arduino/ARM/RISC-V），软件开发生命周期管理（SDLC），深度学习算法。
- **非技术品质**:开拓精神，执行能力强，具有高度的责任心，团队合作思维好。

荣誉，奖项与成就

- **荣誉**:国家奖学金(2020), 国家奖学金(2021), 先进学生标兵
- **奖项**:TRIZ杯创新方法大赛二等奖, 蓝桥杯编程方法大赛二等奖
- **论文**:Application of Diagram Image Classification Based on PCBMER (EI) (Link),Discrimination Correction and Balance for Class-Incremental Learning (EI) (Link), Prototype Representation Expansion in Incremental Learning (SCI) (Link)
- **专利**:机械臂 (设计专利 - ZL 202230694683.0)(Link), 一种设备控制方法 (发明专利)
- **软件著作权**:智能人体状态监控管理系统 (2023SR0028826)