Hui **Li**

📱 +(86) 15502073125   ✉ howarli@qq.com   ✉ eshowarli@mail.scut.edu.cn

⚙ github.com/howarle   **git** gitee.com/howarli   **B** blog.csdn.net/howarli

📍 GuangZhou, Guangdong province, China

🎓 Education

2020.09 – 2024.06	**Undergraduate, South China University of Technology**, School of Soft Engineering, Guangzhou *advisor: Prof. Deyou Tang*, **GPA**: 3.73/4.0 | **Cumulative Score**: 87.92/100 | **Rank**: 5/37

🏆 Contest Experience

2022-12	CCF Big Data and Computing Intelligence Contest (BDCI 2022)	**Champion**
2022-06	Huawei ICT Algorithm Diamond Contest	**Champion**
2022-12	ACM International Collegiate Programming Contest (ICPC2022) Nanjing Region	**Gold Medal**
2022-11	ACM International Collegiate Programming Contest (ICPC2022) Xi'an region	**Gold Medal**
2022-07	ACM International Collegiate Programming Contest (ICPC2021) Asia East Continent Final	**Gold Medal**
2022-04	ACM International Collegiate Programming Contest (ICPC2021) Macau Region	**Gold Medal**
2021-11	ACM International Collegiate Programming Contest (ICPC2021) Jinan Region	**Gold Medal**
2022-07	China Collegiate Programming Contest (CCPC2021) Final	**Silver Medal**
2021-11	China Collegiate Programming Contest (CCPC2021) Haerbin Region	**Gold Medal**
2021-11	China Collegiate Programming Contest (CCPC2021) Weihai Region	**Silver Medal**
2021-06	GuangDong Province Collegiate Programming Contest (GDCPC2021)	**Second Place**
2021-04	ACM International Collegiate Programming Contest (ICPC2020) Asia East Continent Final	**Silver Medal**
2021-04	ACM International Collegiate Programming Contest (ICPC2020) Kunming Region	**Gold Medal**
2020-12	ACM International Collegiate Programming Contest (ICPC2020) Jinan Region	**Gold Medal**
2020-10	China Collegiate Programming Contest (CCPC2020) Weihai Region	**Gold Medal**
2019-07	National Olympiad in Informatics (NOI2019) Final	**Bronze Medal**
2019-06	International Olympiad in Informatics, China Team Selection Competition (CTCS2019)	**Bronze Medal**
2018-07	Tsinghua University independent enrollment, Admission (canceled due to policy change)	

📖 Honor and Scholarship

2021-10	2020-2021 term	National Scholarship
2022-10	2021-2022 term	National Scholarship
2021-11	2020-2021 term	SCUT Pacemaker to Merit Student, Nomination Award
2021-10	2020-2021 term	Excellent Student Cadre
2021-10	2020-2021 term	SCUT Hongchangpingqing Foundation Scholarship
2022-10	2021-2022 term	SCUT Hongchangpingqing Foundation Scholarship
2022-11	2021-2022 term	SCUT Tencent Scholarship
2022-11	SCUT-Huawei "Smart Base" industry-education integration and collaborative education project scholarship	
2023-01	Huawei Euler&Gauss open source contribution elite scholarship	

⚜ Internship

2022.12 – 2023.03	**Software Algorithm Engineer, Huawei Technologies Co Ltd, Dongguan** Participate in optimizing the performance of the module in the reset scenario and reducing the total amount of computation, including: › Locate the bottleneck and analyze the reason according to the flame graph; › Re-select the containers and APIs according to the module logic and data characteristics; › Compilation-time conflict detection for lockless Data Center; The analysis found stander containers are used widely, especially std::map, which is used to maintain a large number of mapping information and consumes a lot of time. To solve this problem, I have done some research on the container: › Build a performance benchmark framework for specific containers and scenarios; › Research the underlying logic of std::map and perform non-intrusive performance optimization. At the same time, I am also honored to be invited by my supervisor to share the basic knowledge and application of data structure algorithm on PDU, and introduce the improvement of targeted algorithm optimization on performance; `C/C++` `C++ STL` `Algorithm Optimize`

🧪 Labortory

2022.06 – 2023.01	**Intelligent Software and robots, Prof.Yi Cai, South China University of Technology** › Research field papers, writing summary; › Attend the construction of laboratory projects; › Reproduce the papers and test their performance on different data sets; `Python` `PyTorch` `NLP`

</> Projects

2022.09 – 2023.01	**CCF BDCI 2022 Multi-task Recognition Based on Wenxin CV Foundation Models, Contest Project** In this context, we need to predict the relative rank of the performance of subnetworks according to their structures, which is a subproblem of Neural Architecture Search. › As the team leader, be responsible for preliminary research, baseline analysis, and task allocation; › Build the framework of the project, unify development and experiment processes; › Construct automation test, simply the process of model selection and parameter optimization; › Responsible for the final defense of our method; In the competition, we innovatively combined the traditional algorithm with the machine learning model, which has made great advantages for the team to reach first place on leaderboard A and B. AI Studio Project URL `Python` `TensorFlow` `Data Mining` `Machine Learning` `Neural Architecture Search`
2022.04 – 2022.09	**Huawei openGauss-MySQL time function compatibility project, School-enterprise cooperation project** Based on time data type compatibility project, continue the compatible support of MySQL time type functions in the openGauss database. › Responsible for MySQL code research, compatibility scheme design, and boundary delimitation⊠ › coding and document generation; › Construct the process of automatic testing for compatibility functions, which greatly improved the efficiency of development and testing; This project is selected as a database course experiment. So I also participate in the Q&A and evaluation of the course practice as a teaching assistant. `C/C++` `SQL` `openGauss Database` `Mysql Database`
2022.01 – 2022.04	**Huawei openGauss-MySQL online migration tool project, School-enterprise cooperation project** Based on Chameleon, develop a full object migration tool from MySQL to openGauss. Objects include tables, views, user-defined functions, user-defined procedures, triggers, etc. The SQL of MySQL is not fully compatible with the PL/pgSQL supported by openGauss, which means SQL translation must involve. To solve this, we build a front end of a compiler to construct MySQL statements into AST, then generate PL/pgSQL through re-travel on the AST. › Responsible for the difference analysis between MySQL and openGauss in the early stage, the survey and test of SQL translation tools, and the process exploration of translator; › Translator development and tracking overall development progress; › Generate test method and test cases; `JAVA` `Python` `SQL` `openGauss Database` `Mysql Database`
2021.10 – 2022.01	**Huawei openGauss-MySQL time data type compatibility project, School-enterprise cooperation project** Expand the compatibility of the Huawei openGauss database to support MySQL time data types. › As the first openGauss project in the laboratory, locate the module and infer type registration process and processing process relies on the user manual and GDB debugging with few development documents; › Complete year, year2 type scheme design, core code implementation, and peripheral functions support; › Generate fastcheck test cases and upgrade scripts; As the compatibility development of openGauss has been ongoing, I am also responsible for the fix of problems caused by subsequent PRs. `C/C++` `SQL` `openGauss Database` `Mysql Database`

☰ Skills

Programming Skills: **C/C++**, Python, Java, LaTeX.

Algorithm: *master in* Traditional Data Structure, String Algorithm, dynamic programing
familiar with Probability and counting, Graph Algorithm, Polynomial convolution

Language Skill: CET-4: 565, CET-6: 472

☗ Activities

Until Now 2022-05	**SCUT ACM Training Team, vice-captain,** ❯ As the person in charge, organize personnel and arrange the event; ❯ As the head of the question-setting team, responsible for creating and verifying exam problems and ensuring their quality.
2022-09 2020-10	**SCUT SE Volunteer Service Team Computer Clinic, President ,** ❯ In charge of recruitment and interviewing new members; ❯ Manage and operate computer clinics, coordinate and communicate with school departments; ❯ Organize personnel and arrange the event
2021-07	**GDCCF Youth Programming Ability Improvement Summer Camp, Instructor,** ❯ Course planning and arrangement, courseware production; ❯ Course teaching, topic explanation, and comment;

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李珲

+(86) 15502073125 ✉ howarli@qq.com ✉ eshowarli@mail.scut.edu.cn

⬙ github.com/howarle **git** gitee.com/howarli **B** blog.csdn.net/howarli

⚲ 广东省广州市番禺大学城

🎓 教育背景

2020.09 – 2024.06	**本科在读，华南理工大学**，软件学院，软件工程专业，广州
	导师: 汤德佑副教授，**GPA**: 3.73/4.0 | **Cumulative Score**: 87.92/100.0 | **Rank**: 5/37

🏆 竞赛经历

2022-12	CCF 大数据与计算智能大赛 (DBCI2022)	**冠军**
2022-06	华为 ICT 算法钻石赛	**冠军**
2022-12	ACM 国际大学生程序设计竞赛 (ICPC2022) 南京站	**金牌**
2022-11	ACM 国际大学生程序设计竞赛 (ICPC2022) 西安站	**金牌**
2022-07	ACM 国际大学生程序设计竞赛 (ICPC2021) 亚洲总决赛 (Asia East Continent Final)	**金牌**
2022-04	ACM 国际大学生程序设计竞赛 (ICPC2021) 澳门站	**金牌**
2021-11	ACM 国际大学生程序设计竞赛 (ICPC2021) 济南站	**金牌**
2022-07	中国大学生程序设计竞赛 (CCPC2021) 全国总决赛	**银牌**
2021-11	中国大学生程序设计竞赛 (CCPC2021) 哈尔滨站	**金牌**
2021-11	中国大学生程序设计竞赛 (CCPC2021) 威海站	**银牌**
2021-06	广东省大学生程序设计竞赛 (GDCPC2021)	**亚军**
2021-04	ACM 国际大学生程序设计竞赛 (ICPC2020) 亚洲总决赛 (Asia East Continent Final)	**银牌**
2021-04	ACM 国际大学生程序设计竞赛 (ICPC2020) 昆明站	**金牌**
2020-12	ACM 国际大学生程序设计竞赛 (ICPC2020) 济南站	**金牌**
2020-10	中国大学生程序设计竞赛 (CCPC2020) 威海站	**金牌**
2019-07	NOI 全国青少年信息学奥林匹克竞赛	**铜牌成绩**
2019-06	国际信息学奥林匹克中国队选拔	**铜牌**
2018-07	清华大学自主招生最优惠降分协议	

📖 荣誉与奖学金

2021-10	2020-2021 学年度 国家奖学金
2022-10	2021-2022 学年度 国家奖学金
2021-11	2020-2021 学年度 华南理工大学十大三好标兵提名奖
2021-10	2020-2021 学年度 优秀学生干部
2021-10	2020-2021 学年度 华南理工大学宏平长青基金奖学金
2022-10	2021-2022 学年度 华南理工大学宏平长青基金奖学金
2022-11	2021-2022 学年度 腾讯奖学金
2022-11	华南理工大学-华为"智能基座"产教融合协同育人基地项目奖学金
2023-01	华为欧拉 & 高斯开源贡献精英奖学金

🎗 实习经历

2022.12 – 2023.03	**软件算法工程师，华为技术有限公司，东莞**
	参与优化模块在复位场景下的性能表现，减少模块消耗的总计算量，包括：
	› 根据火焰图，定位耗时函数并分析原因；
	› 根据模块逻辑和数据特点，重新选择容器、优化容器调用方式；
	› 无锁 DC 的编译期冲突检测；
	分析发现业务代码中大量使用 std 容器，尤其是使用 std::map 容器用于维护大量的映射消息，这一部分贡献了大量的耗时。针对这种情况，我单独对容器进行了一定的研究：
	› 搭建特定场景多容器性能评估框架；
	› 调研 std::map 的底层逻辑，并进行非侵入式性能优化；
	同时我还很荣幸受到主管的邀请，在 PDU 上分享了关于数据结构算法的基础知识和应用，向同事们介绍针对性算法优化对运行效率的提升；
	`C/C++` `C++ STL` `算法优化`

🧪 科研经历

2022.06 – 2023.01 | **智能软件与机器人实验室，蔡毅教授，华南理工大学**
> 调研领域论文，撰写综述；
> 参与实验室项目构建；
> 复现论文，测试论文在不同数据集上的表现；

`Python` `PyTorch` `NLP`

</> 项目经历

2022.09 – 2023.01 | **CCF BDCI 2022 基于文心 CV 大模型的智慧城市视觉多任务识别，赛题项目**
赛题大意为神经架构性能预测，即给出多个不同的神经网络，选手需要根据神经网络的结构，预测这些网络的性能相对排名；训练集大小为 500，预测集大小为 90k。
> 作为组长，负责前期调研、Baseline 分析、任务分配；
> 搭建项目整体框架，统一开发实验流程，实现测试自动化，方便团队进行模型的选择及调参；
> 负责后续决赛材料筹备，决赛答辩；

在赛题中，我创新性的将传统算法与机器学习模型相结合，为团队取得了巨大优势，在 Leaderboard A/B 上均遥遥领先第二名，并顺利通过答辩获得冠军。
项目地址：【2022 CCF BDCI 基于文心 CV 大模型的智慧城市视觉多任务识别】第 1 名方案 🔗

`Python` `TensorFlow` `数据挖掘` `机器学习` `神经架构搜索`

2022.04 – 2022.09 | **华为 openGauss-Mysql 兼容性时间类型相关函数开发合作项目，校企合作项目**
基于《华为 openGauss 兼容 MySQL 时间数据类型开发合作项目》，继续在 openGuass 数据库中对 MySQL 时间类型函数进行兼容开发。
> 主要负责 MySQL 源码调研、兼容性方案设计、边界范围的划定；
> 项目中期的代码开发及文档撰写；
> 在开发中建立了函数兼容性自动化测试的流程，大幅提高了开发和测试的效率；

此项目还被导师作为数据库课程实践，因此我还作为助教，参与课程实践的答疑及评审工作。

`C/C++` `SQL` `openGauss 数据库` `Mysql 数据库`

2022.01 – 2022.04 | **华为 openGauss-MySQL 在线迁移工具支持迁移对象开发合作项目，校企合作项目**
基于 chameleon 开发 MySQL 到 openGauss 的全量对象迁移工具，迁移的对象包括所有 table、view、自定义函数、存储过程、trigger 等。
MySQL 所使用的 sql 语言与 openGauss 所支持的 pgplsql 语言不完全兼容，需要涉及到 sql 语言翻译工作，这一部分难度较大。经过努力，这部分我们使用了阿里的 druid 来对 MySQL 的语句进行解析建立 AST 树，通过重载的方式，遍历 AST 树翻译出其对应的 gpglsql 语句。
> 负责前期 Mysql 与 og 的差异分析、sql 翻译工具的调研测试、druid 的流程探索；
> 项目中期 Druid 重载开发工作，开发进度统筹；
> 撰写测试方案、测试用例；

`JAVA` `Python` `SQL` `openGauss 数据库` `Mysql 数据库`

2021.10 – 2022.01 | **华为 openGauss 兼容 MySQL 时间数据类型开发合作项目，校企合作项目**
对华为 openGauss 数据库进行功能扩展，对 openGauss 兼容 MySQL 时间数据类型作兼容性开发。
> 作为实验室第一个 og 项目，在没有开发文档、资料极少的情况下，仅凭借用户手册及 gdb 调试，定位功能模块代码，并推断数据类型注册流程、处理流程。
> 完成完成 year,year2 类型的方案设计、核心代码的实现及部分周边功能函数的支持；
> 添加 fastcheck 测试用例、撰写 og 升级脚本；

由于 og 的兼容性开发一直在持续进行，后续合入代码可能引起兼容性问题，我还负责此项目的后续问题的修复；

`C/C++` `SQL` `openGauss 数据库` `Mysql 数据库`

☰ 相关技能

编程技能： **C/C++**, Python, Java, LaTeX.
算法能力： 掌握传统数据结构、字符串算法、动态规划、数论反演
熟悉概率与计数、图论、多项式卷积
语言能力： CET-4: 565, CET-6: 472

♟ 活动和组织经历

至今 2022 年 05 月	**华南理工大学 ACM 集训队, 副队长,** › 作为负责人，组织人员，安排赛事； › 作为出题组负责人，负责试题出题、验题工作，把关试题质量； › 主持集训队日常工作，运营集训队；
2022 年 09 月 2020 年 10 月	**华南理工大学软件学院团委心光志愿者服务队电脑诊所, 所长,** › 作为负责人主持新生宣讲、招新工作，并面试筛选成员； › 管理运营电脑诊所，与学校部门协调沟通工作； › 安排电脑诊所日常值班及人员协调；
2021 年 07 月	**广东省计算机学会青少年编程能力提升夏令营, 讲师,** › 完成前期课程规划整理，课件制作； › 作为讲师，负责课程传授，题目讲解点评； › 负责课后答疑，实体讲解录制工作；

(Update: April 15, 2023)