

Tiancai Ye

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Education Background

2012.09 – 2015.06	M.S.	Computer Application	Institute of Computing Technology(ICT), UCAS	
2008.09 – 2012.06	B.S.	Information Engineering	Huazhong University of Science & Technology	Top 3%

Professional Skills

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- 2 years' research and development experiences on multimedia retrieval.
 - Familiar with basic models of machine learning (SVM, CRF, decision tree etc.).
 - Skilled in C/C++, familiar with Python, solid data structure and algorithm foundation.
 - Familiar with Linux and some parallel computing frameworks (MPI, OpenMP).

Project Experiences

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- **Large Scale Image Retrieval System** **Mar.2013 - Now**
In this project, we are required to accomplish the task of image retrieval in real time (30fps) on large scale database (million images). To achieve this goal, we finally decided to use the binary feature and parallel computing framework. As the main developer, I was mainly in charge of designing the core algorithms and also developed the indexing system.
Key words: image retrieval, binary feature, reverse indexing, parallel computing, MPI
 - **TV logo detection of Internet video** **Oct.2012 – Dec.2013**
The project requires detecting the existence of certain TV logos in real time, making use of only single-frame information. As the main developer, I contribute the core algorithm and codes to locate the logos. What's more, during this project, my research finds on salient region detection [2][3] have been published on **ICMR 2014** and **ICME 2014** respectively, the former of which is the leading conference on multimedia retrieval.
Key words: logo detection, salient region detection, CRF, manifold ranking.
 - **Research Project On the next generation video codec standard** **Feb.2012 – Aug.2012**
This project was supported by the National Science Foundation of China, and we are encouraged to do some research on the next generation video codec standard (HEVC). During this project, my research [1] mainly focused on intra mode prediction in HEVC and a fast mode decision algorithm was proposed which provides a reduction of up to 42% in computational complexity. This work was published on **ICIMCS 2013**.
Key words: video codec, intra mode prediction, fast decision algorithm.

My Publications

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- [1] Tiancai Ye, Dongming Zhang, Feng Dai, and Yongdong Zhang . "Fast mode decision algorithm for intra prediction in HEVC," in Proceedings of the Fifth International Conference on Internet Multimedia Computing and Service (**ICIMCS**). ACM, 2013: 300-304.
 - [2] Tiancai Ye, Dongming Zhang, Ke Gao, Guoqing Jin, Yongdong Zhang, Qingsheng Yuan, "Salient Region Detection : Integrate Both Global and Local Cues," in IEEE International Conference on Multimedia and Expo (**ICME**),. IEEE, 2014:105-111.
 - [3] Tiancai Ye, Dongming Zhang, Guoqing Jin, Ke Gao, Xiaoguang Gu, and Yongdong Zhang, "Monte Carlo Sampling based Salient Region Detection," in Proceedings of International Conference on Multimedia Retrieval (**ICMR**). ACM, 2014: 97.

Awards

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- Outstanding student, HUST (10%, 2008-2012) and outstanding student , ICT (8%, 2014)
 - National Scholarship(3%, 2008), HongKong Qiushi Scholarship (1%, 2009, 2011)
 - Second Prize of NUEDC-TI competition(1%, 2011)

Self-evaluation

Self-motivated and has great passion on fresh ideas and technologies. Love sports, especial badminton.

教育背景

2012.09-2015.06	中国科学院计算技术研究所	工学学士	计算机应用技术（免试推荐）
2008.09-2012.06	华中科技大学	工学硕士	电子与信息工程（GPA TOP 2%）

个人技能

- 近两年的多媒体项目开发经验，尤其对**多媒体内容检索**，**显著性区域检测**有深入细致的研究。
- 熟悉机器学习的基础模型(SVM、CRF、决策树等)，并能应用到实际问题中。
- 熟练 Linux 下 C/C++, Python 开发，扎实的数据结构、算法基础知识；了解 MPI、OpenMP 等并行计算框架。
- 良好的英语读写能力，能独立阅读、撰写英语论文资料。

项目经历

- 2014-03 至今 **大规模图像检索系统（国家高新技术研究与发展计划）** 核心开发人员
基于内容的图像检索系统，库规模在百万级别，并要求实现接近实时的在线检索速度(30fps)。作为核心开发人员，负责了项目算法的规划与研究，确定了以二进制特征为基础的高性能并发检索方案。目前已完成了项目的前期调研，并编写测试了核心算法。
关键技术：二进制特征、倒排索引、词袋模型、并行计算
- 2012-10 至 2013-12 **互联网视频中台标识识别系统（242 国家重大安全项目）** 核心开发人员
检测互联网视频中是否存在特定的台标。要求只利用单帧信息，同时要求达到实时检测的速度。作为核心人员，主要负责了台标的检测定位工作。项目期间对显著性区域检测算法的研究工作[2][3]，分别发表于**多媒体检索领域顶级会议 ICMR 2014** (full paper, oral presentation)和**国际会议 ICME 2014**。
关键技术：显著性区域检测、流形排序、条件随机场
- 2012-02 至 2012-08 **下一代视频编解码关键技术研究（国家自然科学基金资助计划）** 核心开发人员
研究下一代视频编解码标准 HEVC（现已发布成为国际标准）的若干关键技术。期间负责研究改进帧内模式预测的快速算法，通过统计，我们得出了帧内预测模式与图像梯度方向的有着密切关系，并通过挖掘这种关联，减少了近 60%的时间消耗，而基本保持视频编码质量不变。相关工作[1]已发表于**国际会议 ICIMCS 2013**。
关键技术：视频编解码、帧内模式预测
- 2011-07 至 2011-10 **腾讯 基础平台组 实习** 实习生
负责腾讯内部 Direct UI 库的维护，同时针对产品部门提出的需求对 QQ 进行改进。实习期间修复多个 BUG，并完成了对 QQ 截图滤镜功能的调研工作。
关键技术：Direct UI、滤镜

论文发表

- [1] Tiancai Ye, Dongming Zhang, Feng Dai, and Yongdong Zhang . “Fast mode decision algorithm for intra prediction in HEVC,” in Proceedings of the Fifth International Conference on Internet Multimedia Computing and Service (ICIMCS). ACM, 2013: 300-304.
- [2] Tiancai Ye, Dongming Zhang, Ke Gao, Guoqing Jin, Yongdong Zhang, Qingsheng Yuan, “Salient Region Detection : Integrate Both Global and Local Cues,” in IEEE International Conference on Multimedia and Expo (ICME),. IEEE, 2014:105-111.
- [3] Tiancai Ye, Dongming Zhang, Guoqing Jin, Ke Gao, Xiaoguang Gu, and Yongdong Zhang, “Monte Carlo Sampling based Salient Region Detection,” in Proceedings of International Conference on Multimedia Retrieval (ICMR). ACM, 2014: 97.

奖项荣誉

- 2014 年，获得中国科学院三好学生(10%)。2008 至 2012 本科在校期间，获得一次**国家励志奖学金(3%)**，两次**香港求是科技奖学金(1%)**，两次**学习优秀奖学金(5%)**，多次获得校三好学生称号(10%)。
- 2010.09 湖北省“TI”杯大学生电子设计竞赛二等奖，同时被校电子电工科技创新中心授予“炬力精英”称号。

自我评价

开朗热情，有毅力，有对技术的执着追求，面对困难能够持续投入解决问题；热爱体育运动，特别喜欢打羽毛球。