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教育背景

2006 年 9 月 **华东师范大学**, 概率论与数理统计, 博士.
2011 年 6 月

2002 年 9 月 **华中师范大学**, 数学与应用数学, 本科.
2006 年 6 月

经历

学术经历

2021 年 1 月 **教授, 博士生导师**, 浙江工商大学统计与数学学院.
至今

2020 年 5 月 **副教授**, 浙江工商大学统计与数学学院.
2020 年 12 月

2013 年 12 月 **副教授**, 温州大学数理学院.
-2020 年 4 月

2011 年 7 月 **讲师**, 温州大学数理学院.
-2013 年 11 月

交流访问

2017 年 10 月 **Research Fellow**, 新加坡国立大学.
-2018 年 4 月

2014 年 6 月 **访问学者**, 台湾中央大学、台湾清华大学.

2010 年 9 月 **访问学者**, 美国密苏里大学哥伦比亚分校.
-2011 年 3 月

研究方向

○ 大数据分析、贝叶斯计算、工业统计、可靠性建模

荣誉和奖励

- 1 “浙江省高校领军人才培养计划” 高层次拔尖人才 (2022)
- 2 浙江省高校中青年学科带头人 (2017)
- 3 第一届全国统计科技进步奖三等奖 (2021)
- 4 华东师范大学优秀博士培养基金 (2010)
- 5 华东师范大学优秀博士论文 (2011)
- 6 2011 International workshop on objective Bayesian methodology, Best Poster Award
- 7 温州大学第四届“学生科技创新优秀指导教师” (2014)
- 8 温州大学第四届“我心目中的好导师” (2015)

研究课题

纵向课题

- 2022 年 1 月
-2025 年 12 月 **退化系统剩余寿命的贝叶斯在线预测关键算法与理论研究**, 国家自然科学基金面上项目 (12171432), 直接经费 50 万 + 间接经费 30 万.
[主持](#)
- 2017 年 1 月
-2020 年 12 月 **竞争失效模型中若干关键问题的研究**, 国家自然科学基金面上项目 (11671303), 直接经费 48 万 + 间接经费 9.6 万.
[主持](#)
- 2013 年 1 月
-2015 年 12 月 **加速寿命试验中小样本最优设计方法**, 国家自然科学基金青年项目 (11201345), 22 万.
[主持](#)
- 2024 年 1 月
-2026 年 12 月 **基于复杂退化模型的系统剩余寿命预测理论与方法 (LZ24A010002)**, 浙江省自然科学基金重点项目, 20 万.
[主持](#)
- 2023 年 7 月
-2025 年 6 月 **多维指数扩散过程的构建及其近似贝叶斯推断方法**, 省属高校基本科研业务费项目 (重大项目), 18 万.
[主持](#)
- 2022 年 8 月
-2024 年 7 月 **大规模退化监测数据的近似贝叶斯推断方法**, 浙江省哲学社会科学规划课题 (22JCXK09YB), 3 万.
[主持](#)

2015 年 1 月 -2017 年 12 月 **带屏蔽数据系统可靠性的贝叶斯评估**, 浙江省自然科学基金一般项目 (LY15G010006), 6 万.

主持

2015 年 9 月 -2016 年 9 月 **可修屏蔽系统可靠性的贝叶斯评估方法**, 中国博士后科学基金面上项目 (2015M572598), 5 万.

主持

2015 年 9 月 -2016 年 9 月 **屏蔽数据系统可靠性评估的贝叶斯方法**, 陕西省博士后科学基金一等资助, 4 万.

主持

横向课题

2019 年 11 月 -2020 年 11 月 **小子样可靠性数据分析**, 华为机器有限公司, 经费 29.7 万.

项目成果: 产品量产之前需要做保证试验来验证产品的可靠性是否达到设计要求。按照文献方法设计出来的试验时间较长, 通常达不到企业要求。本人提出融合多源信息的贝叶斯保证试验设计方法在保证估计精度的同时, 大大降低了试验时间, 从而缩短产品研发周期。该方法已被华为机器有限公司采纳并应用。针对 10 种电子产品的测试中, 新方法至少能减少 30% 的试验时间。

2019 年 6 月 -2020 年 6 月 **可靠性分析核心算法 (Weibull) 技术**, 华为机器有限公司, 经费 48 万.

项目成果: 目前企业常用可靠性数据分析软件 ReliaSoft 和 Weibull+ 都属于美国公司, 在美国制裁的压力下, 华为机器有限公司委托我们团队开发可靠性数据分析模块, 并将处理寿命数据的贝叶斯学习理论集成到模块中使用。目前该模块已成功交付, 并获华为上海研究所“2020 年优秀技术成果奖”。

2018 年 9 月 -2019 年 9 月 **基于贝叶斯方法隐患挖掘预警算法及应用**, 华为终端 (东莞) 有限公司, (11201345), 22 万.

项目成果: 电子产品故障测试数据属于一类超稀疏数据, 这给故障特征的识别带来巨大挑战。本人提出分块 Binomial-Beta 和 Multinomial-Dirichlet 的贝叶斯在线预警算法, 能有效地识别故障特征。该算法已被华为终端 (东莞) 有限公司采纳并应用。在华为内部提供的一千组测试数据当中, 新算法比其原方法的准确率平均提升约 20%, 正确判断故障发生时间平均提前 12 小时。

社会兼职

- 第十一届中国运筹学会可靠性分会**副理事长**、中国现场统计研究会可靠性工程分会**常务理事**。

论文与著作

目前以第一作者或通讯作者发表论文 52 篇，其中 ESI 高被引论文 4 篇，中科院一区 11 篇，SCI 检索论文 47 篇。具体如下：

- [1] Ancha Xu and Yincai Tang, Bayesian analysis of pareto reliability with dependent masked data, **IEEE Transactions on Reliability**, Vol. 58(4), 583-588, 2009. doi:10.1109/TR.2009.2026811
- [2] Ancha Xu and Yincai Tang, Reference Analysis for Birnbaum-Saunders Distribution, **Computational Statistics and Data Analysis**, Vol. 54(1), 185-192, 2010. doi:10.1016/j.csda.2009.08.004
- [3] Ancha Xu and Yincai Tang, EM algorithm for degradation data analysis, **Journal of East China Normal University (Natural Science)**, 5, 38-48, 2010.
- [4] Ancha Xu and Yincai Tang, Nonparametric Bayesian analysis of competing risks problem with masked data, **Communications in Statistics – Theory and Methods**, Vol. 40(13), 2326-2336, 2011. doi:10.1080/03610921003786830
- [5] Ancha Xu and Yincai Tang, Bayesian analysis of Birnbaum-Saunders distribution with partial information, **Computational Statistics and Data Analysis**, Vol. 55(7), 2324-2333, 2011. doi:10.1016/j.csda.2011.01.021
- [6] Ancha Xu and Yincai Tang, Objective Bayesian Analysis of Accelerated Competing Failure Models under Type-I Censoring. **Computational Statistics and Data Analysis**, Vol. 55(10), 2830-2839, 2011. doi:10.1016/j.csda.2011.04.009
- [7] Ancha Xu and Yincai Tang, Statistical Analysis of Competing Failure Modes in Accelerated Life Testing Based on Assumed Copulas, **Chinese Journal of Applied Probability and Statistics**, Vol. 28(1), 51-62, 2012.
- [8] Jiayu Fu, Ancha Xu and Yincai Tang, Objective Bayesian Analysis of Pareto Distribution under Progressive Type-II Censoring, **Statistics and Probability Letters**, Vol. 82(10), 1829-1836, 2012. doi:10.1016/j.spl.2012.06.007
- [9] Ancha Xu and Yincai Tang, Objective Bayesian Analysis for Linear Degradation Models, **Communications in Statistics – Theory and Methods**, Vol. 41(21), 4034-4046, 2012. doi:10.1080/03610926.2012.705942
- [10] Ancha Xu and Yincai Tang, An Overview on Statistical Analysis for Masked System Lifetime Data, **Chinese Journal of Applied Probability and Statistics**, Vol. 28(4), 380-388, 2012.
- [11] Qiang Guang, Yincai Tang and Ancha Xu, Objective Bayesian Analysis For Bivariate Marshall-Olkin Exponential Distribution, **Computational Statistics and Data Analysis**, Vol. 64(7), 299-313, 2013. doi:10.1080/03610926.2012.705942
- [12] Ancha Xu and Yincai Tang, Posterior Propriety in Nonparametric Mixed Effects Model, **Applied Mathematics—A Journal of Chinese Universities**, Series B, Vol. 28(3), 369-378, 2013. doi:10.1007/s11766-013-2844-0

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- [14] [Ancha Xu](#), Yincai Tang and Qiang Guan, Bayesian Analysis of Masked Data in Step-stress Accelerated Life Testing, **Communications in Statistics - Simulation and Computation**, Vol. 43(8), 2016-2030, 2014. [doi:10.1080/03610918.2013.848894](https://doi.org/10.1080/03610918.2013.848894)
- [15] Qiang Guan, Yincai Tang, Jiayu Fu and [Ancha Xu](#), Optimal Multiple Constant-stress Accelerated Life Tests For Generalized Exponential Distribution, **Communications in Statistics - Simulation and Computation**, Vol. 43(8), 1852-1865, 2014. [doi:10.1080/03610918.2013.810257](https://doi.org/10.1080/03610918.2013.810257)
- [16] [Ancha Xu](#), Sanjib Basu and Yincai Tang, A full Bayesian approach for masked data in step-stress accelerated life testing, **IEEE Transactions on Reliability**, Vol. 63(3), 98-806, 2014. [doi:10.1109/TR.2014.2315940](https://doi.org/10.1109/TR.2014.2315940)
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- [19] 李亚兰, [徐安察](#), Pareto 分布下屏蔽数据的贝叶斯分析及其应用, **应用概率统计**, Vol. 31(3), 267-276, 2015. [doi:10.1016/j.jspi.2015.06.002](https://doi.org/10.1016/j.jspi.2015.06.002)
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- [25] Hui Zhang and [Ancha Xu](#), Bayesian analysis of the Marshall-Olkin bivariate Weibull distribution, **应用概率统计**. Vol. 32(4), 419-432, 2016. [doi:10.3969/j.issn.1001-4268.2016.04.008](https://doi.org/10.3969/j.issn.1001-4268.2016.04.008)

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- [34] Shirong Zhou and [Ancha Xu](#), Exponential Dispersion Process for Degradation Analysis, **IEEE Transactions on Reliability**. Vol.68(2), 398-409, 2019. doi:10.1109/TR.2019.2895352
- [35] Qiang Guan, Yincai Tang and [Ancha Xu](#), Objective Bayesian analysis for competing risks model with Wiener degradation phenomena and catastrophic failures, **Applied Mathematical Modeling**. Vol. 74, 422-440, 2019. doi:10.1016/j.apm.2019.04.063
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- [37] [Ancha Xu](#), Jiawen Hu and Pingping Wang, Degradation modeling with subpopulation heterogeneities based on the inverse Gaussian process, **Applied Mathematical Modelling**. Vol. 81, 177-193, 2020. doi:10.1016/j.apm.2019.12.017
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- [40] Jiawen Hu, [Ancha Xu](#), Bo Li and Haitao Liao, Condition-based maintenance planning for multi-state systems under time-varying environmental conditions, **Computers & Industrial Engineering**. Vol. 158, 107380, 2021. doi:[10.1016/j.cie.2021.107380](#)
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- [45] Liangliang Zhuang, [Ancha Xu](#), Binbing Wang, Yuguo Xue and Songzi Zhang, Data analysis of progressive-stress accelerated life tests with group effects, **Quality Technology & Quantitative Management**. Vol. 20(6), 763-783, 2023. doi: [10.1080/16843703.2022.2147690](#)
- [46] [徐安察](#), [章礼明](#), [顾诚](#), [吴昌仁](#), Bayesian Inference for Multicomponent Stress–Strength Model Under Weibull Distribution, **应用概率统计**, Vol. 39(6), 907-923, 2023. doi:[10.3969/j.issn.1001-4268.2023.06.009](#)
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- [51] [Ancha Xu](#), Guanqi Fang, Liangliang Zhuang and Cheng Gu, A multivariate student-t process model for dependent tail-weighted degradation data, **IIE Transactions**. 2024. doi: [10.1080/24725854.2024.2389538](#)

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非一作和通讯文章

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- [2] Qiang Guan, Yincui Tang and [Ancha Xu](#), Reference Bayesian analysis of inverse Gaussian degradation process, **Applied Mathematical Modelling**. Vol. 74, 496-511, 2019. doi: [10.1016/j.apm.2019.05.013](https://doi.org/10.1016/j.apm.2019.05.013)
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图书章节

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指导博士生

- 2022 级 庄亮亮 (与朱利平教授联合指导)
2024 级 尹宏

指导硕士生

- 2013 级 李亚兰, 张慧
2014 级 李晓晓, 刘小宁
2015 级 周世荣 (华东师范大学博士, 现入职温州大学), 高正大 (联合指导)
2016 级 王秀, 杨超, 候格格 (联合指导, 西北工业大学读博)
2018 级 何慧姿, 余炳鹏, 丁力 (联合指导)
2019 级 庄亮亮 (浙江工商大学读博)
2020 级 章礼明
2021 级 顾诚, 王斌兵, 吴昌仁, 薛渝国
2022 级 安柳亭, 黎敏, 翁鑫铭, 俞云龙, 朱迪
2023 级 汪任兵, 吴奇
2024 级 陈桢, 柳李嘉

指导学生竞赛

- 2015 年 浙江省第十四届“挑战杯”大学生课外学术科技作品竞赛一等奖 (2/3, 作品最终获全国二等奖)
2012,2014-2016 年 美国大学生数学建模竞赛二等奖
2012 年 全国大学生数学建模竞赛浙江省一等奖
2011,2014 年, 2017 年 全国研究生数学建模竞赛三等奖