

# 汽车航迹推算研究进展

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## ① 研究内容

## ② 研究计划

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文献

试验

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## ② 研究计划

# 国内外研究现状

根据深度神经网络在航迹推算中

- 基于滤波的方法，深度神经网络
- 端到端

# 国内外研究现状

作者	文章题目	期刊/会议	发表日期
Changhao Chen, et al	Learning Selective Sensor Fusion[1]	IEEE Trans Neural Netw Learn Syst	2022
Ze Chen, et al	Contrastive Learning[2]	IEEE Sens. J.	2022
Changhao Chen, et al	DynaNet[1]	IEEE Trans Neural Netw Learn Syst	2021
Changhao Chen, et al	Deep Neural Network[3]	IEEE Trans Mob Comput	2021
Changhao Chen, et al	Deep Learning[4]	IEEE Internet Things J.	2020
Changhao Chen, et al	MotionTransformer[5]	AAAI	2019
Changhao Chen, et al	IONet[6]	AAAI	2018

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## 文献

## 试验

# ② 研究计划

# 数据集

- **Awesome GINS Dataset[7].**
- **RoNIN Dataset[8].**
- **KITTI Dataset[9].**



# 深度神经网络模型

- 数据集和模型间的交叉验证

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- 数据集和模型间的交叉验证

## 参考文献 I

- [1] Changhao Chen et al. “DynaNet: Neural Kalman Dynamical Model for Motion Estimation and Prediction”. In: *IEEE Transactions on Neural Networks and Learning Systems* 32 (12 Dec. 2021), pp. 5479–5491. ISSN: 2162-237X. DOI: 10.1109/TNNLS.2021.3112460. URL: <https://ieeexplore.ieee.org/document/9547669/>.
- [2] Ze Chen et al. “Contrastive Learning of Zero-Velocity Detection for Pedestrian Inertial Navigation”. In: *IEEE Sensors Journal* 22 (6 Mar. 2022), pp. 4962–4969. ISSN: 1530-437X. DOI: 10.1109/JSEN.2021.3072160. URL: <https://ieeexplore.ieee.org/document/9399505/>.

## 参考文献 II

- [3] Changhao Chen et al. “Deep Neural Network Based Inertial Odometry Using Low-Cost Inertial Measurement Units”. In: *IEEE Transactions on Mobile Computing* 20 (4 Apr. 2021), pp. 1351–1364. ISSN: 1536-1233. DOI: 10.1109/TMC.2019.2960780. URL: <https://ieeexplore.ieee.org/document/8937008/>.
- [4] Changhao Chen et al. “Deep-Learning-Based Pedestrian Inertial Navigation: Methods, Data Set, and On-Device Inference”. In: *IEEE Internet of Things Journal* 7 (5 May 2020), pp. 4431–4441. ISSN: 2327-4662. DOI: 10.1109/JIOT.2020.2966773. URL: <https://ieeexplore.ieee.org/document/8960327/>.

## 参考文献 III

- [5] Changhao Chen et al. “Transferring Physical Motion Between Domains for Neural Inertial Tracking”. In: (Oct. 2018). URL: <http://arxiv.org/abs/1810.02076>.
- [6] Changhao Chen et al. “IONet: Learning to Cure the Curse of Drift in Inertial Odometry”. In: *Proceedings of the AAAI Conference on Artificial Intelligence* 32 (1 Apr. 2018), pp. 6468–6476. ISSN: 2374-3468. DOI: 10.1609/aaai.v32i1.12102. URL: <https://ojs.aaai.org/index.php/AAAI/article/view/12102>.
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## 参考文献 IV

- [8] Sachini Herath, Hang Yan, and Yasutaka Furukawa. “RoNIN: Robust Neural Inertial Navigation in the Wild: Benchmark, Evaluations, & New Methods”. In: 2020, pp. 3146–3152. ISBN: 9781728173955. DOI: 10.1109/ICRA40945.2020.9196860.
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# 谢谢