

# 國立陽明交通大學 機械工程學系

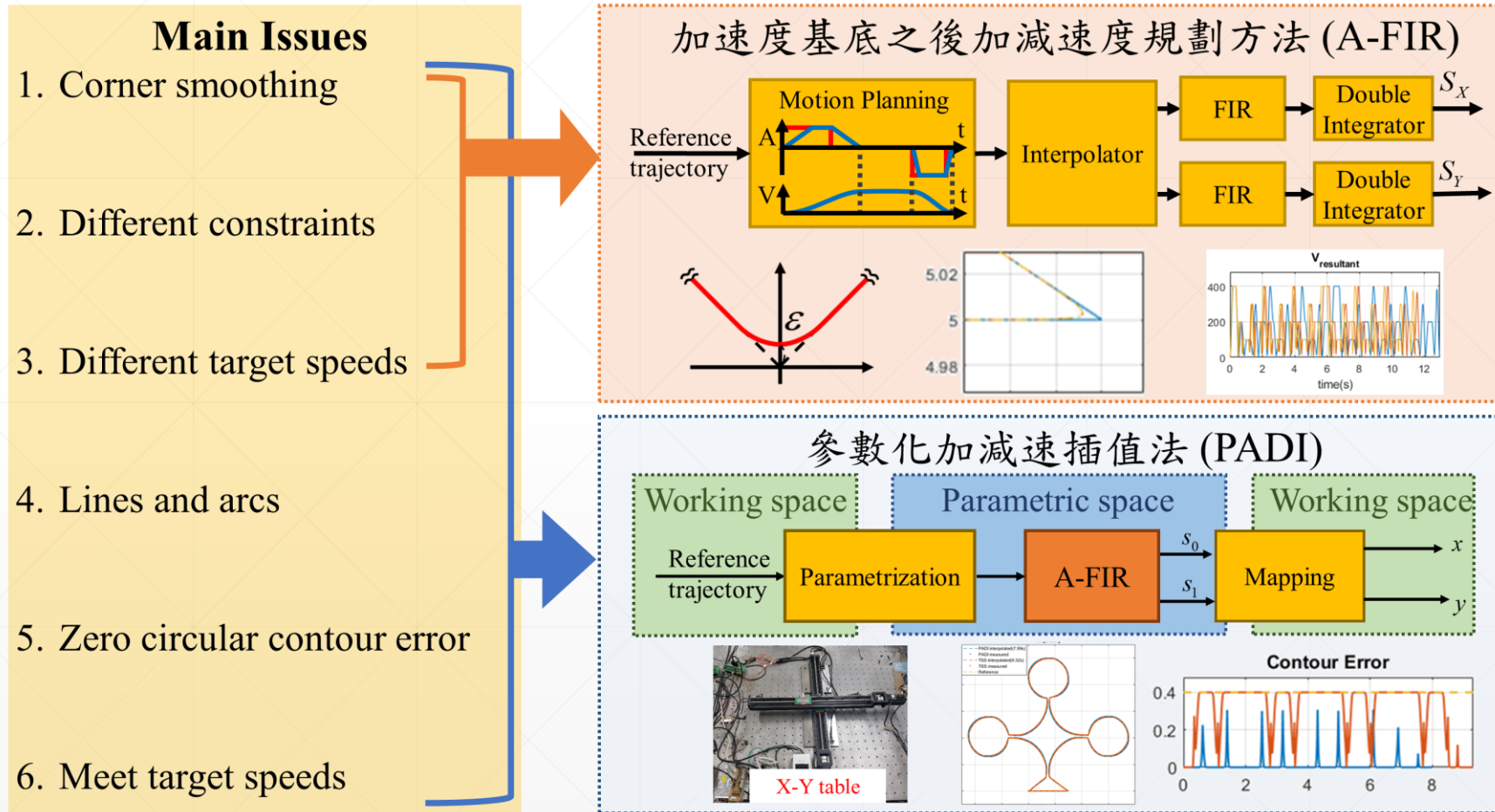
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# 研究領域 - 運動規劃

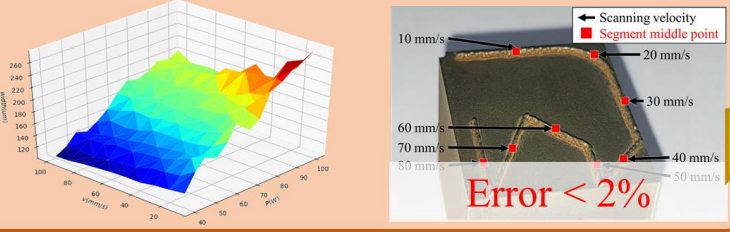
## 加速度基底之後加減速度規劃方法



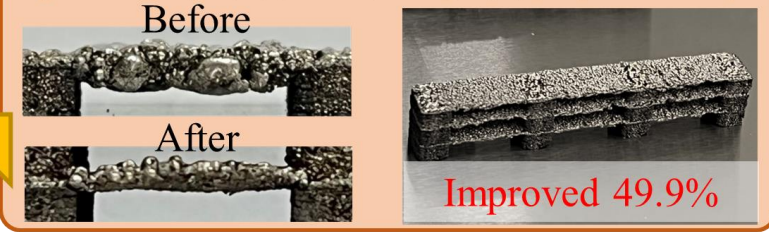
# 研究領域-金屬積層製造 智能化選擇性雷射燒融系統

## 選擇性雷射燒融系統

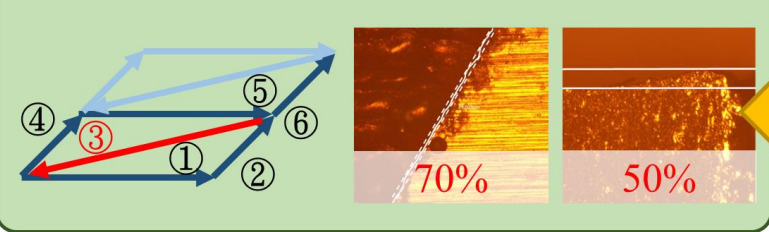
### 數據驅動模型之多層薄壁結構



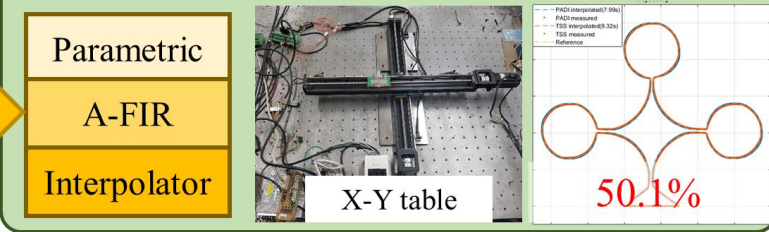
### 多重製程模型之無支撐材懸空結構



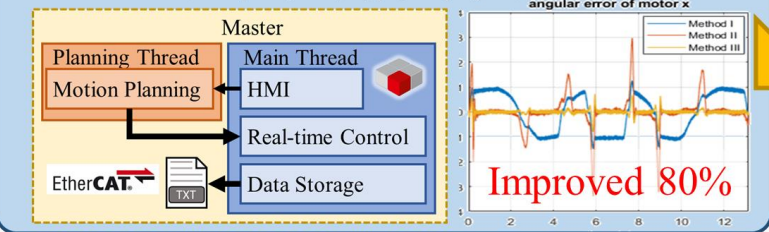
### 高精度及高緻密度之對角式掃描策略



### 參數化加減速插值法



### 混合集中分散式學習控制



### 雷射加工之光機電軟硬體整合設計

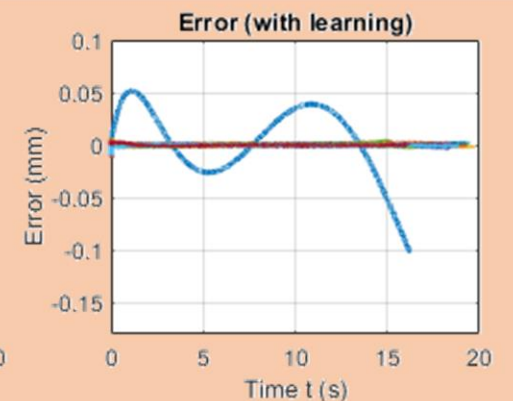
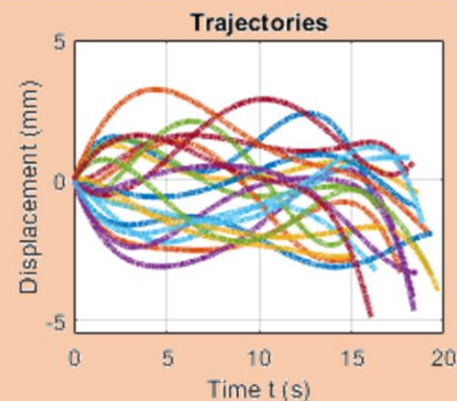
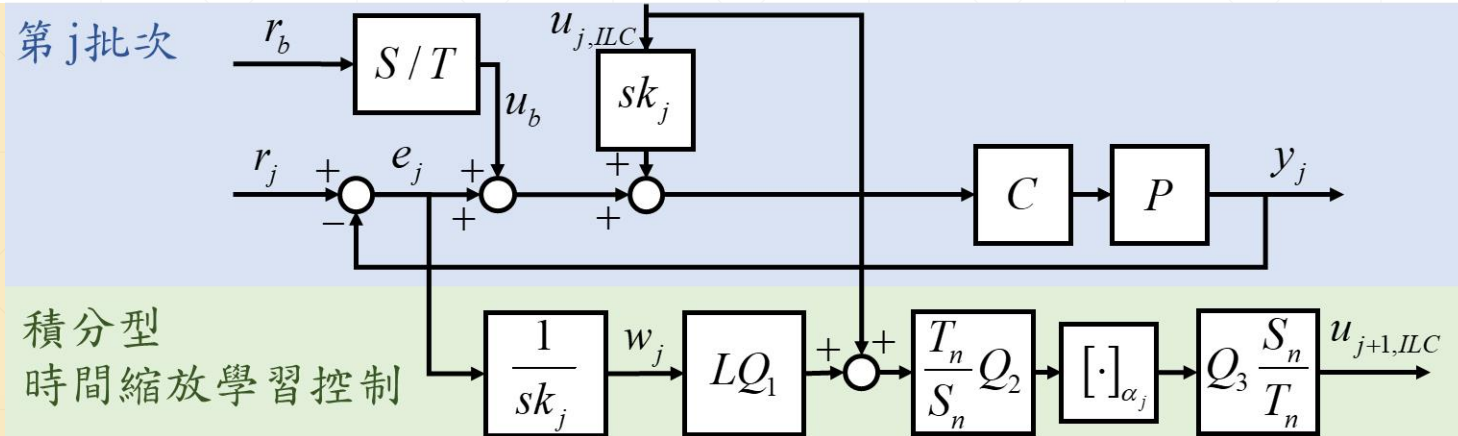


# 研究領域-學習控制

## 積分型時間縮放迭代學習控制

### Highlights

1. Enable precision tracking of non-repetitive, bounded trajectories.
2. Ensure convergence of error in the sense of L2 norm.
3. Accommodate inherent system uncertainties and external disturbances with robustness.
4. Facilitate design optimization within the frequency domain.



# 已發表學術著作

- 博士論文

- 「數控系統改良之參數化加速度基底運動規劃、混合集中分散式控制與時間縮放迭代學習控制」· 指導教授：李安謙教授

- 期刊論文

1. **Ruei-Yu Huang**, Jun-Qi Lu, Chung-Wei Cheng, Mi-Ching Tsai, An-Chen Lee, "Multi-Data-Driven Model-based Control to Improve the Accuracy of Overhang Structures in Laser Powder Bed Fusion," Optics and Laser Technology, Vol. 171, April 2024, pp. 110398.
2. **Ruei-Yu Huang**, Chung-Wei Cheng, and An-Chen Lee, "Parametric FIR Filtering for G-Code Interpolation with Corner Smoothing and Zero Circular Contour Error for NC systems," The International Journal of Advanced Manufacturing Technology, Vol. 125, February 2023, pp. 4379-4397.
3. **Ruei-Yu Huang**, Meng-Hao Lin, Ruei-Shian Lai, Chung-Wei Cheng, Mi-Ching Tsai, and An-Chen Lee, "Novel Diagonal Scanning Strategy for the Laser Powder Bed Fusion Process," The International Journal of Advanced Manufacturing Technology, Vol. 121, August 2022, pp. 7949-7961.
4. **Ruei-Yu Huang**, Chung-Wei Cheng, Mi-Ching Tsai, and An-Chen Lee, "Acceleration-based FIR Filters for Trajectory Interpolation with Different Kinematic Constraints and Target Velocities for NC Systems," Control Engineering Practice, Vol. 124, July 2022, pp. 105204.
5. **Ruei-Yu Huang**, Yen-Jen Chen, Yu-Xian Chen, Chung-Wei Cheng, Mi-Ching Tsai, An-Chen Lee, "Advanced Application of Centralized Control for a Scanning Mirror System based on EtherCAT Fieldbus," International Journal of Control, Automation and Systems, Vol.19, No.4, January 2021, pp. 1205-1214.
6. An-Chen Lee, **Ruei-Yu Huang**, Trong-Doan Nguyen, Chung-Wei Cheng and Mi-Ching Tsai, "Laser Powder Bed Fusion of Multilayer Thin-walled Structures Based on Data-driven Model," Journal of Laser Micro/Nanoengineering, Vol. 15, No. 1, June 2020, pp. 38-44.
7. An-Chen Lee, **Ruei-Yu Huang**, Yu-Xian Chen, Te-Hsiu Tsai, and Chen-Yu Chang, "Minimum Variance Run-to-Run Controller for General Stochastic Time-Series-Based Disturbances," Journal of the Chinese Society of Mechanical Engineers, Vol.41, No. 4, August 2020, pp. 391-400.
8. Yu-Xian Chen, **Ruei-Yu Huang**, Shih-Chung Chang, Yi-Ren Pan and An-Chen Lee, "A New Framework of Disturbance Observer with Vidyasagar's Structure," Journal of the Chinese Society of Mechanical Engineers, Vol.39, No.6, December 2018, pp. 619-635.

- 研討會論文

1. **Ruei-Yu Huang**, Chung-Wei Cheng, An-Chen Lee, "NURBS Path Tracking Control of a Scanning Mirror System based on EtherCAT Fieldbus," 2018 3rd International Conference on Control and Robotics Engineering, Nagoya Institute of Technology, Nagoya, Japan, April 2018. (Excellent Oral Presentation Award)
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