YANJUN JI

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Dr. Yanjun Ji is an associate professor at Jiaxing Vocational and Technical College's Institute of Intelligent Manufacturing. His research primarily focuses on communication anti-jamming technology and UAV flight control, with a deep understanding of channel error-correcting codes and UAV swarm flight algorithms. He has made significant contributions to the development of advanced navigation systems that integrate GPS, IMUs, barometers, and other sensors for precise positioning and obstacle avoidance. Dr. Ji's work in designing innovative flight control algorithms based on PID, LQR, and nonlinear control methodologies enhances UAV stability and efficiency. His efforts have resulted in numerous patents and publications, advancing practical applications in civilian sectors such as environmental monitoring, logistics, and agriculture. As an educator, Dr. Ji continues to inspire students and colleagues through his dedication to cutting-edge technologies in electrical engineering.

Education

Air Force Engineering University — Apr. 2008
Ph.D., Communication and Information Systems — *Xi'an, China*

Air Force Engineering University — Apr. 2005
M.S., Communication and Information Systems — *Xi'an, China*

Professional Experience

Jiaxing Vocational Technical College — Step. 2022 –
Associate Professor, Intelligent Manufacturing College — *Jiaxing, China*

Eastern Liaoning University — Apr. 2017 – Step. 2022
Associate Professor, School of Engineering and Technology — *Dandong, China*

Research Interests

- **Communication anti-interference technology:** Spread spectrum communication; Channel coding and error correction codes; Interference suppression algorithms
- **UAV flight control technology:** Navigation system; Flight control algorithm; Mission planning and management; Communication link; Stability enhancement; Autonomous decision-making capability
- **Human-AI interaction:** 3D Object/Scene Understanding; VR/AR
- **AI + X:** Education; Healthcare

Publications

- *Journal Articles*

[1]. The first author Research on **Adaptive Modulation Algorithm for MIMO-OFDM System Based on LDPC Frequency Domain Encoding** [J]. Journal of System Simulation (Chinese Core Journal, EI Retrieval) 2008, 12 (12):87~89. (EI).

[2]. The first author **Peak to Average Ratio Method Based on GCS Companion Sorting System** [J]. Journal of

Air Force Engineering University (Natural Science Edition) (Chinese Core Journal) 2007, 45 (12):82~85.

[3]. The first author **FPGA Implementation Method for PAR of GOLAY Complementary Sequence Reduced OFDM System** [J]. Application of Electronic Technology (Chinese Core Journal) 2007, 45 (2):103~106.

[4]. The first author **Joint construction method of low complexity quasi cyclic LDPC codes in OFDM systems** [J]. Journal of Missile and Guidance (Chinese Core Journal) 2007, 27 (1):67~71.

[5]. The first author Research on t**he Implementation Method of Peak to Average Ratio FPGA Based on DVB-H System** [J]. Television Technology (Chinese Core Journal). 2007, 31(2):14~16.

[6]. The first author Research on **Synchronization Algorithm for OFDM System Based on CAZAC Sequence** [J]. Journal of System Simulation (Chinese Core Journal, EI Retrieval) 2008, 6 (16):66~69. (EI).

[7]. The first author **A Implementation Method of Huffman Encoding Based on MATLAB** [J]. Journal of Missile and Guidance (Chinese Core Journal). 2005, 25 (1):489~491.

[8]. Third author **Formation and Implementation of Adaptive Beamforming for Smart Antennas** [J]. Microelectronics and Computer (Chinese Core Journal). 2006, 23(8): 32~34.

[9]. Second author **A Implementation Method of High speed TUOBO Code Encoder and Decoder Based on FPGA** [J]. Liaodong Journal (Natural Science Edition). 2020, 23(8): 32~34.

- *Conference Papers*

[10]. The first author **The Clock Acquisition Algorithm Design and Performance Analysis for Wavelet based OFDM System** [A]. Wireless Communications, Networking and Mobile Computing, 2007 (WiCom 2007). International Conference on 21-25 September 2007 Page (s): 354~357 Digital Object Identifier 10.1109/WICOM.2007.95 (EI)

[11]. Third author **Target tracking algorithm based on Hausdorff distance** [A]. Award winning paper at the 2007 National Doctoral Forum on Communication and Signal Xi'an pp: 341~345.

[12]. Second author **Hardware Implementation Method of LDPC Efficient Decoding Based on FPGA**[A]. 7th Annual International Conference on Network and Information Systems for Computers（ICNISC 2021）(EI).

Patents

[13]. **Omni-directional high-reliability communication of unmanned aerial vehicles by using three-dimensional LDPC codes**

- Role: Lead Inventor
- Patent Number: 2024/04018
- Filing Date: May 23, 2024
- Status: Granted

[14]. **Low-power long-distance communication of unmanned aerial vehicles by using LDPC codes**

- Role: Lead Inventor
- Patent Number: 2024/04161
- Filing Date: May 28, 2024
- Status: Granted

[15]. **A multi-axis machining center used for producing components of aerospace engines**

- Role: Co-Inventor
- Patent Number: 230953049768
- Filing Date: Dec. 10, 2023
- Status: Granted

[16]. **LINK11 signal identification method based on cumulative autocorrelation**

- Role: Co-Inventor
- Patent Number: 2024/00021
- Filing Date: Jan. 2, 2024
- Status: Granted

[17]. **Blind detection algorithm of uav frequency hopping signal based on adaptive morphology**

- Role: Co-Inventor
- Patent Number: 2023/11738
- Filing Date: Dec. 21, 2023
- Status: Granted

Teaching

Introduction to Aviation, Eastern Liaoning University Fall 2017

- Course design and planning
- Responsible for delivering 16 lectures, constituting all the course content
- Assessment design and grading

UAV Structure and System, Eastern Liaoning University Fall 2018

- Course design and planning
- Responsible for delivering 16 lectures, constituting all the course content
- Assessment design and grading

Communication and Navigation Technology, Eastern Liaoning University Fall 2019

- Course design and planning
- Responsible for delivering 20 lectures, constituting all the course content

Drone Flight Control Technology, Eastern Liaoning University Spring 2021,2022

- Course design and planning
- Responsible for delivering 26 lectures, constituting all the course content

Sensors and Intelligent Detection Technology, Jiaxing Vocational Technical College Spring 2023

- Course design and planning
- Responsible for delivering 28 lectures, constituting all the course content

Embedded Systems Development, Jiaxing Vocational Technical College Fall 2024

- Course design and planning
- Responsible for delivering 20 lectures, constituting all the course content

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