

# Won-Hyouk Jang

## Education

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### Texas A&M University

May 2004

*PhD*  
Chemical Engineering

College Station, TX

May 2001

*Master of Science*  
Chemical Engineering

College Station, TX

### Hanyang University

February 1993

*Master of Science*  
Chemical Engineering

Seoul  
Korea, Republic Of

February 1991

*Bachelor of Science*  
Chemical Engineering

Kyungki  
Korea, Republic Of

## Experience

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### Texas A&M University

June 2000 - Present

*Graduate Research Assistant*

College Station, TX

### Kolon Engineering & Construction Co.

July 1996 - July 1999

*Researcher (Manager)*

Kyungki  
Korea, Republic Of

Projects :

1. Development of Fuzzy Control Systems for the Combustion Process of Waste Incinerators
2. Development of Simulation and Design S/W for the Combustion Process of Waste Incinerators
3. Development of Pre-Combustion Desulfurization and Deashing Process for High-Sulfur Coals by the Column Flootation

Skills: Computer Programming (C/C++ and Visual Basic), PLC Programming and HMI S/W and DCS Application

### Choheung Chemical Co.

March 1993 - June 1996

*Researcher*

Seoul  
Korea, Republic Of

Projects :

1. Development of Specialty Chemical Processes
2. Chemical Process Improvement

Skills: Computer Programming (C/C++)

## Computer Skills

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1. S/W Integration: ActiveX and DDE Interfaces between Visual Basic.Net, Matlab, Aspen Plus, Microsoft Office, etc.
2. Computer Programming: Visual Basic.Net, Matlab, C/C++, JAVA, Pascal, and Fortran
3. Process Simulator: Aspen Plus and Prosim
4. PLC (GE-Fanuc) Programming
5. HMI S/W (Fix, Intellution) Application and DDE Interface for DCS (Freelance 2000, Hartmann & Braun)

## Research Interests

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1. Optimal Control
  - Model Predictive Control (MPC) based on the Nonlinear State-Space and Neural Network Models
  - LQR and LQG Controls
2. Global Optimization for the Process Integration and Synthesis, the Operating Condition Change, and the Plant Design
  - Stochastic Search Methods: Tabu Search, Genetic Algorithm, Simulated Annealing
  - Software Integration Between Process Simulators and Optimization Problem Solvers
  - Hybrid Methods: Stochastic Search Methods and SQP
  - MILP and MINLP Techniques: Branch and Bound and Penalty Function Methods
3. System Identification for Process Control and Optimization
  - Linear and Nonlinear Parameter Estimation
  - Black-Box Modeling: Neural Network, Stochastic, and Fuzzy Modeling
  - State Estimation: Linear Kalman Filter and Extended Kalman Filter
4. Heuristic Control
  - Knowledge Based Control Constructed by the Fuzzy Logics

## Related Classes

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1. Chemical Engineering: Process Dynamics, Process Safety Engineering, Advanced Process Integration and Synthesis, Gas and Petroleum Processing (Attendance)
2. Mathematics: Applied Probability, Mathematics of Finance
3. Aerospace Engineering: Estimation of Dynamic Systems (Attendance), Optimal Spacecraft Attitude and Orbital Maneuvers (Optimal Control; Attendance)

## Publications/Presentations

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1. Jang, W., Hall, K.R., and Hahn, J., "Cost Allocation Framework Based on the Design Benefit Method for Natural Gas Processes," in Preparation to be submitted to Chemical Engineering Progress.
2. Jang, W., Parlos, A.G., Kazantzis, N., and Whittaker, D., "Digital Neural Network-Based Modeling Technique for Food Extrusion Processes," in Preparation.
3. Cho, W., Roh, S., Kim, S., Jang, W., and Son, S., "The Process Modeling and Simulation for the Fault Diagnosis of Rotary Kiln Incineration Process," Journal of Ind. & Eng. Chemistry (Korean), 4, pp. 99 (1998).
4. Jang, W., Hahn, J., and Hall, K.R., "Investigation of Initialization Methods for Improving the Performance of Genetic Algorithms," Submitted to American Control Conference, Boston, MA, 2004.
5. Jang, W., Choi, K., and Son, S., "Fuzzy Expert Control System for the Combustion Process of the Incinerator," Proc. of Korean Society of Environmental Engineers Congress, Kongju, Chungnam, Korea, 1998.

## References

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Relationship: M.S. Thesis Advisor