



## Edison Tse

Associate Professor of Management Science and Engineering, Emeritus

### CONTACT INFORMATION

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### Bio

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#### BIO

Professor Edison Tse received his BS, MS, and Ph.D. in Electrical Engineering from Massachusetts Institute of Technology. He is the Director of Asia Center of Management Science and Engineering, which has the charter of developing executive training programs for executives in Asian enterprises, conducting research on development of the emerging economy in Asia and establishing research affiliations with Asian enterprises, with a special focus in Greater China: China, Hong Kong, and Taiwan.

In 1973, he received the prestigious Donald Eckman Award from the American Automatic Control Council in recognition of his outstanding contribution in the field of Automatic Control. He had served as an Associate Editor of the IEEE Transactions of Automatic Control, and a co-editor of the Journal of Economic Dynamics and Control, which he co-founded.

Professor Tse has done research in system and control engineering, economic dynamics and control, computer integrated systems to support fishery management policy decisions, management and control of manufacturing enterprise, and industrial competitive analysis and product development. Tse developed a framework for analyzing dynamic competitive strategy that would shape the formation of an ecosystem supporting a value proposition. Within such a framework, he developed dynamic strategies for firms entering an emerging market, latecomers entering a matured market, and firms managing transformation. Using this framework, he developed a new theory on the business transformation of a company and the economic transformation of a developing economy. He applied his theory to explain China's rapid growth since 1978, changing from a production economy to an innovation economy. His current research is extending the theory to managing product success, managing inflection point disruptions, sustainable growth strategy in a dynamic changing environment, and industries' strategy responding to geopolitics disruption. Over the years he has made valuable contributions in the field of engineering, economics, and business creation and expansion. He has published over 180 papers on his research activities. From 2004- 2015, he co-directed various Stanford-China programs on regional industry and enterprise transformation that were attended by high level city officials from various cities in China and high level executives from Chinese enterprises. From 2007-2013, he co-directed a Stanford Financial Engineering Certificate Program in Hong Kong that upgrades the quality of managers and traders in the financial institutions in Hong Kong. He was a co-founder and a Board member of Advanced Decision System (ADS), a technology company with emphasis on AI and advanced decision tools. The company was found in 1979 and later acquired by Booz Allen and Hamilton in 1991. In 1988, Verity was spun off from ADS with AI search

engine technology developed in ADS to provide enterprise search software. He was a Board member of Verity representing ADS before Verity went IPO in 1995. From 2007-2010, he was a Board member of KBC Fund Management Co., Ltd.

## ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Management Science and Engineering

## PROGRAM AFFILIATIONS

- Center for East Asian Studies

## PROFESSIONAL EDUCATION

- BS, MIT (1970)
- MS, MIT (1970)
- PhD, MIT (1970)

## Teaching

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### COURSES

#### 2023-24

- Disruptive Innovations in New Globalization Era: MS&E 279 (Spr)
- Dynamic Entrepreneurial Strategy: MS&E 274 (Spr)
- Introduction to Product Management: MS&E 265 (Win)

#### 2022-23

- Disruptive Innovations in New Globalization Era: MS&E 279 (Spr)
- Dynamic Entrepreneurial Strategy: MS&E 274 (Spr)
- Introduction to Product Management: MS&E 265 (Aut, Win)

#### 2021-22

- Dynamic Entrepreneurial Strategy: MS&E 274 (Spr)
- Dynamic Systems: MS&E 201 (Spr)
- Introduction to Product Management: MS&E 265 (Aut, Win)

## Publications

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### PUBLICATIONS

- **Managing Product Success: Cool, Good, and Great Products**  
Tse, E.  
Innovation Ink Publisher.2023
- **Navigating In-Betweenness: How 1.5 Generation Immigrant Entrepreneurs Recombine Resources from Both Worlds** *1.5 Generation Korea Diaspora: A Comparative Understanding of transnationalism*  
Lee, J., Tse, E.  
edited by Lee, J. Y., Kim, M.  
Lexington Books.2021
- **Is China Ready for the Next Disruptive Innovation?** *Shifting Gears in Innovative Policy*  
Tse, E.  
edited by Lee, Y. S., Hoshu, T., Shin, G. W.  
Walter H. Shorenstein Asia-Pacific Research Center.2020

- **Basic Needs Disruptive Innovation** *Tsinghua Management Review*  
Tse, E.  
2019; April (19)
- **The Art of Disruptive Innovation (in Chinese #####)**  
Tse, E. T., Zhang, L.  
China CITIC Press.2018
- **Redefine Innovation (in Chinese #####)**  
Tse, E. T.  
China CITIC Press.2016
- **Inferior search engine's optimal choice: Knowledge-sharing service versus search quality** *ELECTRONIC COMMERCE RESEARCH AND APPLICATIONS*  
Kim, K., Tse, E.  
2014; 13 (6): 387-401
- **Search engine competition with a knowledge-sharing service** *DECISION SUPPORT SYSTEMS*  
Kim, K., Tse, E.  
2014; 66: 180-195
- **Disruptive Innovation and Company Transformation** *Harvard Business Review China*  
Tse, E.  
2013; October: 108-111
- **Dynamic search engine competition with a knowledge-sharing service** *DECISION SUPPORT SYSTEMS*  
Kim, K., Tse, E. T.  
2012; 52 (2): 427-437
- **Toward Disruptive Innovation** *Tsinghua Business Review*  
Tse, E.  
2012; October: 12-16
- **Disruptive Innovation (in Chinese #####)**  
Tse, E. T.  
Wuzhou.2012
- **The Role of the Business Model on Dynamic Capability in the Electronics Industry** *IEEE International Technology Management Conference (ITMC)*  
Na, Y., Tse, E.  
IEEE.2012: 10-17
- **Dynamic Competition Strategy for Online Knowledge-Sharing Platforms** *INTERNATIONAL JOURNAL OF ELECTRONIC COMMERCE*  
Kim, K., Tse, E.  
2011; 16 (1): 41-76
- **Competition in Search Engine Market** *Journal of Business Strategies*  
Zhao, W., Tse, E.  
2011
- **Building innovative organizations in China: The "execution plus " organization** *ASIA PACIFIC JOURNAL OF MANAGEMENT*  
Gu, M., Tse, E.  
2010; 27 (1): 25-53
- **The Resource-Based View of Competitive Advantage in Two-Sided Markets** *JOURNAL OF MANAGEMENT STUDIES*  
Sun, M., Tse, E.  
2009; 46 (1): 45-64
- **Building innovative organizations in China: the execution+ organization** *Asia Pacific Journal of Management*  
Gu, M., Tse, E.

2008

- **Sustainable Growth of Payment Card Network: A two-sided market Approach** *Journal of Business Strategies*  
Sun, M., C., Tse, E.  
2007
- **When Does the Winner Take All in Two-Sided Markets?** *Review of Network Economics*  
C., M., M., Tse, E.  
2007
- **Informing the design of direct-touch tabletops** *IEEE COMPUTER GRAPHICS AND APPLICATIONS*  
Shen, C., Ryall, K., Forlines, C., Esenther, A., Vernier, F. D., Everitt, K., Wu, M., Wigdor, D., Morris, M. R., Hancock, M., Tse, E.  
2006; 26 (5): 36-46
- **Grabber-holder dynamics and network effects in technology innovation** *JOURNAL OF ECONOMIC DYNAMICS & CONTROL*  
Tse, E.  
2002; 26 (9-10): 1721-1738
- **Managing the Use of Information Technology to Promote Process Innovation** *Designing Innovations in Industrial Logistic Modeling*  
Tse, E.  
edited by Kusiak, A., Bielli, M.  
CRC Press.1997
- **VASODILATOR UNRESPONSIVENESS OF ACUTE POSTISCHEMIC RENAL-ALLOGRAFT FAILURE**  
Tse, E., VINOT, O., Huie, P., Sibley, R. K., Wang, B. Y., Cooke, J. P., Dafoe, D., Alfrey, E., Scandling, J., Myers, B. D.  
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- **LEARNING-MODELS IN DYNAMIC MANUFACTURING** *JOURNAL OF INTELLIGENT MATERIAL SYSTEMS AND STRUCTURES*  
Tse, E., NARONGDEJ, P.  
1994; 5 (2): 258-271
- **INTELLIGENT SUPPORT SYSTEM FOR CONTINUOUS IMPROVEMENT IN A DYNAMIC MANUFACTURING ENVIRONMENT** *COMPUTER INTEGRATED MANUFACTURING SYSTEMS*  
Tse, E.  
1991; 4 (4): 229-238
- **IMPLICIT GAMES - ANALYSIS OF ASYMPTOTIC COMPETITIVE BEHAVIORS** *EUROPEAN JOURNAL OF OPERATIONAL RESEARCH*  
Namatame, A., Tse, E.  
1990; 47 (3): 387-393
- **Industry Structure Modeling for Competitive Analysis: An Integrated AI and Systems Approach** *Computer Science in Economics and Management*  
Tse, E., Jaffer, S.  
1990
- **AN EXTENSION OF KARMARKAR PROJECTIVE ALGORITHM FOR CONVEX QUADRATIC-PROGRAMMING** *MATHEMATICAL PROGRAMMING*  
Ye, Y. Y., Tse, E.  
1989; 44 (2): 157-179
- **A NOTE ON THE RADIUS OF CONVERGENCE OF THE USA ALGORITHM** *JOURNAL OF ECONOMIC DYNAMICS & CONTROL*  
KHILNANI, A., TSE, E. T.  
1989; 13 (2): 313-316
- **MONOPOLISTIC PROVISION OF CONGESTED SERVICE WITH INCENTIVE-BASED ALLOCATION OF PRIORITIES** *INTERNATIONAL ECONOMIC REVIEW*  
Viswanathan, N., TSE, E. T.  
1989; 30 (1): 153-174
- **AN INTEGRATED SYSTEM MODEL FOR A FISHERY MANAGEMENT PROCESS .1. MODEL STRUCTURE** *COMPUTERS & MATHEMATICS WITH APPLICATIONS*

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- Tse, E., KHILNANI, A.  
1989; 17 (8-9): 1329-1343
- **AN INTEGRATED SYSTEM MODEL FOR A FISHERY MANAGEMENT PROCESS .2. A CASE-STUDY** *COMPUTERS & MATHEMATICS WITH APPLICATIONS*  
Tse, E., KHILNANI, A.  
1989; 18 (6-7): 675-690
  - **Computer Integrated Manufacturing Enterprise Management Systems** *Intelligent Management Systems II*  
Tse, E., Lee, H., Wu, B.  
edited by Milacic, V. R.  
Elsevier Publisher.1988
  - **USA ALGORITHM - RESPONSE** *JOURNAL OF ECONOMIC DYNAMICS & CONTROL*  
KHILNANI, A., TSE, E. T.  
1987; 11 (3): 461-463
  - **TRACKING AND CLASSIFYING MULTIPLE TARGETS WITHOUT A PRIORI IDENTIFICATION** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Mori, S., Chong, C. Y., Tse, E., Wishner, R. P.  
1986; 31 (5): 401-409
  - **Actively Adaptive Control for Nonlinear Stochastic Systems** *Adaptive Methods for Control System Design*  
Tse, E., Bar-Shalom, Y.  
edited by Gupta, M.  
IEEE Press.1986
  - **The Simulation and Expert Environment** *Coupling Symbolic and Numerical Computing in Expert Systems*  
Lounamaa, P., Tse, E.  
edited by Kowalik, J. K.  
Elsevier Science Publishers.1986
  - **Adaptive Stochastic Control for a Class of Linear Systems"** *Adaptive Methods for Control System Design*  
Tse, E., Athans, M.  
edited by Gupta, M.  
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  - **A FIXED-POINT ALGORITHM WITH ECONOMIC APPLICATIONS** *JOURNAL OF ECONOMIC DYNAMICS & CONTROL*  
KHILNANI, A., Tse, E.  
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  - **STRUCTURAL DESIGN FOR CLASSES OF POSITIVE LINEAR-SYSTEMS** *IEEE TRANSACTIONS ON SYSTEMS MAN AND CYBERNETICS*  
Rouhani, R., Tse, E.  
1981; 11 (2): 126-134
  - **ADAPTIVE EXPECTATIONS AND DYNAMIC ADJUSTMENT IN NONCOOPERATIVE GAMES WITH INCOMPLETE INFORMATION** *JOURNAL OF OPTIMIZATION THEORY AND APPLICATIONS*  
Namatame, A., Tse, E.  
1981; 34 (2): 243-261
  - **AGGREGATION AND INFORMATION STRUCTURING IN LARGE-SCALE DYNAMIC-SYSTEMS** *IEEE TRANSACTIONS ON SYSTEMS MAN AND CYBERNETICS*  
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  - **BOUNDING THE BEHAVIOR OF POSITIVE DYNAMIC-SYSTEMS** *JOURNAL OF ECONOMIC DYNAMICS & CONTROL*  
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  - **POLE PLACEMENT THROUGH THE MODALATOR APPROACH** *INTERNATIONAL JOURNAL OF CONTROL*

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- Arbel, A., Tse, E.  
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- **ADAPTIVE INPUT-MATCHING CONTROL OF STRUCTURALLY VARYING PLANTS** *AUTOMATICA*  
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  - **EXPERIMENTATION AND BUDGETING IN ADVERTISING - AN ADAPTIVE-CONTROL APPROACH** *OPERATIONS RESEARCH*  
PEKELMAN, D., Tse, E.  
1980; 28 (2): 321-347
  - **OBSERVER DESIGN FOR LARGE-SCALE LINEAR-SYSTEMS** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Arbel, A., Tse, E.  
1979; 24 (3): 469-476
  - **REDUCED-ORDER MODELS, CANONICAL FORMS AND OBSERVERS** *INTERNATIONAL JOURNAL OF CONTROL*  
Arbel, A., Tse, E.  
1979; 30 (3): 513-531
  - **QUANTITATIVE MEASURE OF IDENTIFIABILITY** *IEEE TRANSACTIONS ON SYSTEMS MAN AND CYBERNETICS*  
Tse, E.  
1978; 8 (1): 1-8
  - **ADAPTIVE IMPLEMENTATION OF ONE-STEP-AHEAD OPTIMAL-CONTROL VIA INPUT MATCHING** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
Johnson, C. R., Tse, E.  
1978; 23 (5): 865-872
  - **ACTIVELY ADAPTIVE-CONTROL FOR NONLINEAR STOCHASTIC-SYSTEMS** *PROCEEDINGS OF THE IEEE*  
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1976; 64 (8): 1172-1181
  - **CAUTION, PROBING, AND VALUE OF INFORMATION IN CONTROL OF UNCERTAIN SYSTEMS** *ANNALS OF ECONOMIC AND SOCIAL MEASUREMENT*  
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1976; 5 (3): 323-337
  - **OPTIMAL TIMING FOR AN ADVERTISING COPY REPLACEMENT (COPY LIFE-CYCLE)**  
PEKELMAN, D., Tse, E.  
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  - **Concepts and Methods in Stochastic Control** *Control and Dynamic Systems: Advances in Theory and Applications*  
Bar-Shalom, Y., Tse, E.  
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  - **Structural Determination and Parameter Identification for Multivariable Stochastic Linear Systems** *IEEE Transaction on Automatic Control*  
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  - **Adaptive Dual Control for Stochastic Nonlinear Systems with Free End-Time** *IEEE Transaction on Automatic Control*  
Tse, E., Bar-Shalom, Y.  
1975
  - **DUAL EFFECT, CERTAINTY EQUIVALENCE, AND SEPARATION IN STOCHASTIC CONTROL** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*  
BARSHALO, Y., Tse, E.  
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  - **ACTIVELY ADAPTIVE CONTROL FOR LINEAR-SYSTEMS WITH RANDOM PARAMETERS VIA DUAL CONTROL APPROACH** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*

- Tse, E., BARSHALO, Y.  
1973; AC18 (2): 109-117
- **Wide-Sense Adaptive Dual Control for Stochastic Nonlinear Systems** *IEEE Transaction on Automatic Control*  
Tse, E., Bar-Shalom, Y., Meier, L.  
1973
  - **Observer-Estimators for Discrete-Time Linear Systems** *IEEE Transaction on Automatic Control*  
Tse, E.  
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  - **An Actively Adaptive Control for Linear Systems with Random Parameters via the Dual Control Approach** *IEEE Transaction on Automatic Control*  
Tse, E., Bar-Shalom, Y.  
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  - **Adaptive Stochastic Control for a Class of Linear Systems** *IEEE Transaction on Automatic Control*  
Tse, E., Athans, M.  
1972
  - **On the Identifiability of Parameters** *IEEE Transaction on Automatic Control*  
Tse, E., Anton, J., J.  
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  - **Target Track Pulse Scheduling** *IEEE Transaction on Aero-Space and Electronic Systems*  
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1971; November: 1113-1122
  - **On the Optimal Control of Stochastic Systems** *IEEE Transaction on Automatic Control*  
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  - **Optimal Minimal-Order Observer-Estimators for Discrete Linear Time Varying System** *IEEE Transaction on Automatic Control*  
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