



Edison Tse

Associate Professor of Management Science and Engineering

CONTACT INFORMATION

- **Administrator**

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Bio

BIO

Professor 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. In recent years he dedicated his research effort in dynamic entrepreneurial strategy and transformation of Chinese production economy to innovation economy. He developed a significant theory on innovation synergistic to Chinese culture and its application to China industry transformation. 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. Since March 2003, he has been teaching his new found theory on China innovation and Industry Transformation to high level Chinese government officials and Chinese executives.

Since 2007, 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. Since 2009, he co-directed a Stanford program on Regional Industry Transformation and Public Administration that was attended by city officials from various cities in China, and directs a Stanford program on Chinese Industry Transformation and Innovation that was attended by executives from Chinese enterprises. Prof. Tse is the author of over 150 articles in the fields of systems and control. He received the 1973 Donald P. Eckman Award for outstanding achievement in the field of automatic control. Prior to joining the Stanford faculty, he worked at Systems Control, Inc., where he formulated and solved numerous problems in defense, electric power, forecasting and marketing.

At Stanford, he has developed computer integrated systems to support fishery management policy decisions, management and control of the manufacturing enterprise, and industrial competitive analysis and product development. He is currently conducting research on building core competence within an enterprise to gain competitive advantage. He established the Journal of Economic Dynamics and Control and is now a member of its Advisory Board. His national society memberships include the Econometric Society, IEEE, ORSA, and TIMS. Tse developed a framework for analyzing dynamic competitive strategy based on a dynamic model of grabber-holder dynamics that describes the forces that would shape the formation of an ecosystem supporting an exciting vision. Within such a framework, he developed dynamic strategies for firms entering an emerging market, latecomers that want to wedge into a matured market, and firms that need to turn danger into opportunities. Tse's

recent interests are in extending the theory to analyzing the dynamic competition in network economy, regional technology center development, and applying the theory of dynamic strategies to the wireless, airport, real estate, and financial industries in China.

ACADEMIC APPOINTMENTS

- Associate Professor, Management Science and Engineering

PROGRAM AFFILIATIONS

- Center for East Asian Studies

PROFESSIONAL EDUCATION

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

Teaching

COURSES

2021-22

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

2020-21

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

2019-20

- Dynamic Entrepreneurial Strategy: MS&E 274 (Spr)
- Dynamic Systems: MS&E 201 (Spr)
- Introduction to Finance and Investment: MS&E 145 (Aut)
- Introduction to Product Management: MS&E 265 (Aut, Win)
- Senior Project: MS&E 108 (Win)

2018-19

- Dynamic Entrepreneurial Strategy: MS&E 274 (Win)
- Dynamic Systems: MS&E 201 (Spr)
- Introduction to Investment Science: MS&E 145 (Aut)
- Introduction to Stochastic Control with Applications: EE 266, MS&E 251 (Spr)
- Senior Project: MS&E 108 (Win)

STANFORD ADVISEES

Master's Program Advisor

Brooke Martin, Evan Mickas, Nina Prabhu, Abigail Price, Niv Rajesh, Kivalu Ramanlal, Claire Rosenfeld, Grace Tan, Noah Williams, Grace Zhao

Publications

PUBLICATIONS

- **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
- **Dynamic search engine competition with a knowledge-sharing service** *DECISION SUPPORT SYSTEMS*
Kim, K., Tse, E. T.
2012; 52 (2): 427-437
- **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
- **When Does the Winner Take All in Two-Sided Markets?** *Review of Network Economics*
C., M., M., Tse, E.
2007
- **Sustainable Growth of Payment Card Network: A two-sided market Approach** *Journal of Business Strategies*
Sun, M., C., Tse, E.
2007
- **Informing the design of direct-touch tablets** *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
- **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.
AMER SOC NEPHROLOGY.1995: 478–78

- **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 KARMAKAR 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 .2. A CASE-STUDY** *COMPUTERS & MATHEMATICS WITH APPLICATIONS*
Tse, E., KHILNANI, A.
1989; 18 (6-7): 675-690
- **AN INTEGRATED SYSTEM MODEL FOR A FISHERY MANAGEMENT PROCESS .1. MODEL STRUCTURE** *COMPUTERS & MATHEMATICS WITH APPLICATIONS*
Tse, E., KHILNANI, A.
1989; 17 (8-9): 1329-1343
- **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
- **A FIXED-POINT ALGORITHM WITH ECONOMIC APPLICATIONS** *JOURNAL OF ECONOMIC DYNAMICS & CONTROL*
KHILNANI, A., Tse, E.
1985; 9 (2): 127-137
- **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.

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- 1981; 34 (2): 243-261
- **AGGREGATION AND INFORMATION STRUCTURING IN LARGE-SCALE DYNAMIC-SYSTEMS** *IEEE TRANSACTIONS ON SYSTEMS MAN AND CYBERNETICS*
Arbel, A., Tse, E.
1980; 10 (11): 723-729
 - **ADAPTIVE INPUT-MATCHING CONTROL OF STRUCTURALLY VARYING PLANTS** *AUTOMATICA*
Johnson, C. R., Tse, E.
1980; 16 (3): 317-321
 - **EXPERIMENTATION AND BUDGETING IN ADVERTISING - AN ADAPTIVE-CONTROL APPROACH** *OPERATIONS RESEARCH*
PEKELMAN, D., Tse, E.
1980; 28 (2): 321-347
 - **BOUNDING THE BEHAVIOR OF POSITIVE DYNAMIC-SYSTEMS** *JOURNAL OF ECONOMIC DYNAMICS & CONTROL*
Rouhani, R., Tse, E.
1980; 2 (3): 283-299
 - **POLE PLACEMENT THROUGH THE MODALATOR APPROACH** *INTERNATIONAL JOURNAL OF CONTROL*
Arbel, A., Tse, E.
1980; 31 (6): 1137-1145
 - **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
 - **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
 - **QUANTITATIVE MEASURE OF IDENTIFIABILITY** *IEEE TRANSACTIONS ON SYSTEMS MAN AND CYBERNETICS*
Tse, E.
1978; 8 (1): 1-8
 - **ACTIVELY ADAPTIVE-CONTROL FOR NONLINEAR STOCHASTIC-SYSTEMS** *PROCEEDINGS OF THE IEEE*
Tse, E., BARSHALOM, Y.
1976; 64 (8): 1172-1181
 - **CAUTION, PROBING, AND VALUE OF INFORMATION IN CONTROL OF UNCERTAIN SYSTEMS** *ANNALS OF ECONOMIC AND SOCIAL MEASUREMENT*
BARSHALOM, Y., Tse, E.
1976; 5 (3): 323-337
 - **OPTIMAL TIMING FOR AN ADVERTISING COPY REPLACEMENT (COPY LIFE-CYCLE)**
PEKELMAN, D., Tse, E.
INFORMS.1975: B394-B394
 - **Structural Determination and Parameter Identification for Multivariable Stochastic Linear Systems** *IEEE Transaction on Automatic Control*
Tse, E., Weinert, H., L.
1975
 - **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.
1974; AC19 (5): 494-500
- **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.
1973
- **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.
1973
- **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.
1972