CHANG-YE TU

RESEARCH

Sequential Decision Making under Uncertainty: Applications of

- Stochastic Optimal Control [9, 10, 5, 6, 7, 8]
- Theory of Optimal Stopping [1]
- Deep Learning and Reinforcement Learning [3]

Qualitative Methods in Inverse Scattering Theory [13, 14, 16]

EDUCATION

PhD, Actuarial Science — Sep 2016 – Jul 2021
Department of Risk Management and Insurance
National Chengchi University, Taipei, Taiwan

Research topics:

- deep learning approach to option hedging [3]
- pricing and hedging problems of investment-linked insurance policies [4, 5]
- reinvestment risk of international bonds [1]
- optimal insurance regulatory scheme [10]

MSc, Applied Mechanics — Sep 1999 – Jun 2001
Institute of Applied Mechanics
National Taiwan University, Taipei, Taiwan

- Research topics: anisotropic elasticity; boundary integral equations.
- Thesis: "A New Boundary Integral Equation for Thermal Stress Analysis of Anisotropic Elastic Bodies" (in Chinese).

BSc, Civil Engineering — Oct 1992 – Jun 1996
Department of Civil Engineering
National Taiwan University, Taipei, Taiwan

WORK EXPERIENCE

Custom Software Developer — Mar 2005 – Sep 2016
Independent

- Developed and maintained a clinical information system exclusively built for Taiwan's National Health Insurance (NHI); the system has been adopted by several clinics in the region and ad hoc system support was provided.
- Developed and maintained an enterprise resource planning (ERP) system for a local machine parts manufacturer by using open source software; implemented security and vision inspection modules using OpenCV.

Research Assistant — Aug 2001 – Jul 2003
Department of Risk Management and Insurance
National Chengchi University, Taipei, Taiwan

- Conducted symbolic manipulation (application of Itô lemma) and numerical solution of nonlinear PDE by using Mathematica™ [8].
- Implemented Markov chain approximation method for numerically solving Hamilton-Jacobi-Bellman equations arising in asset allocation problem [6].

LANGUAGE

Mandarin	Native
English	TOEIC 945 (2019)
German	Elementary

CODING

Python	10+ yrs
C/C++	10+ yrs
R	10+ yrs
MATLAB™	10+ yrs
HTML/CSS/JS	10+ yrs
LaTeX	10+ yrs

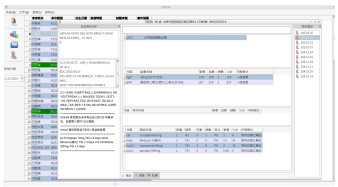
CONTACT

chang-ye-tu.github.io
chang-ye-tu

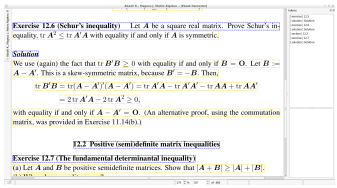
SOFTWARE

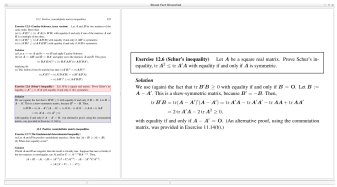
All software projects and papers with accompanying code are hosted on github.

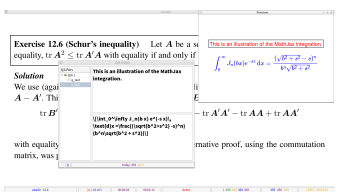
MYCIS: A clinical information system built exclusively for Taiwan's National Health Insurance (NHI)



Ānanda: A collection of adaptive computer assisted learning / memorizing subroutines.







PUBLICATIONS

Journal Articles (peer reviewed)

[1] **C.-Y. Tu***† and S.-C. Chang, "Estimation of reinvestment risk of international bonds," *Review of Securities and Future Markets*, vol. 33, no. 4, pp. 77–102, 2021, (TSSCI).

[2] S.-C. Chang, Y.-K. Lee, W. Hsuan, and **C.-Y. Tu**, "Allocating overseas: Risk assessment of currency hedging in Taiwan life insurance industry," *Asia-Pacific Journal of Risk and Insurance*, vol. 14, no. 1, pp. 1–16, 2020, (EconLit).

[3] S.-C. Chang and **C.-Y. Tu**†, "Dynamic hedging of options by deep learning," *Insurance Monograph*, vol. 36, no. 4, pp. 1–20, 2020.

[4] **C.-Y. Tu**† and S.-C. Chang, "Numerical valuation of double barrier options: The finite element method approach," *Journal of Risk Management*, vol. 21, no. 1, pp. 5–21, 2019.

[5] S.-C. Chang and **C.-Y. Tu**†, "Optimal asset allocation under the liquidity constraint," *Journal of Risk Management*, vol. 20, no. 2, pp. 85–105, 2018.

[6] S.-C. Chang, **C.-Y. Tu**, and C.-H. Tsai, "Pension fund management using the Markov chain approximation," *Asia Pacific Management Review*, vol. 10, no. 4, pp. 259–266, 2005, (EconLit, TSSCI).

[7] S.-C. Chang, **C.-Y. Tu**, and Y.-S. Teng, "Speculating and hedging in optimal investment strategy for multi-period fund management," *Insurance Monograph*, vol. 19, no. 1, pp. 1–21, 2003.

[8] S.-C. Chang, C.-H. Tsai, C.-J. Tien, and **C.-Y. Tu**, "Dynamic funding and investment strategy for defined benefit pension schemes: Model incorporating asset-liability matching criterions," *Journal of Actuarial Practice*, vol. 10, pp. 131–155, 2002.

Preprints (submitted)

[9] W. Hsuan, **C.-Y. Tu**†, and S.-C. Chang, "On Merton's optimal consumption-investment problem: A Lie symmetry analysis approach."

[10] **C.-Y. Tu***† and S.-C. Chang, "Optimal insurance solvency regulatory schemes under the early warning system."

Working Papers

[11] W. Hsuan, **C.-Y. Tu**†, and S.-C. Chang, "Forex hedging: The copula-GARCH approach."

[12] W. Hsuan, **C.-Y. Tu**†, and S.-C. Chang, "Valuation of international bond."

[13] **C.-Y. Tu***†, "Electromagnetic scattering problems in chiral media."

[14] **C.-Y. Tu***†, "Inverse obstacle scattering problem of a perfect conductor."

[15] **C.-Y. Tu***†, "Optimal study and review scheduling."

[16] **C.-Y. Tu***†, "The monotonicity approach to inverse obstacle scattering problem."

REFERENCES

Available upon requests.