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Research interests include:

- **Mathematical Finance/Financial Engineering**
- **Behavioral Finance**
- **Optimal Stopping Problem**

On-going GRF project

General Optimal Stopping Problem with Non-Linear Expectation Target and its Application in Finance

Abstract

In this project we seek to investigate a new class of optimal stopping problems involving capacity, in particular probability distortion, in the target. In the literature, an abundant research has been done on the optimal stopping problems in various fields such as engineering, science, physics, economics, and finance in particular. In those models, it has essentially been - explicitly or implicitly - assumed that the decision makers are rational which means they are not only able to evaluate the objective probabilities but will also use them to measure their decisions. However, in many areas such as economics and finance, where human behavior plays an important - if not central - role in decision making problems, the decision maker's target could highly depend on her personal subjective preference. Kahneman and Tversky (1979) have shown that people tend to use distorted probability instead of the original objective probability when they evaluate their investment. This has motivated us to consider the optimal stopping problems with target under distorted probability. Such optimal stopping problems are arising from all human - general animal - behavior related fields. There are fundamental difficulties in solving such optimal stopping problems. Both new analytical and numerical methods need to be developed to tackle the problems. This is a new yet challenging research field. The optimal stopping problem with non-linear expectation target is a large unexplored research area. Therefore, many fundamental problems currently remain open and new methodology needs to be developed. By establishing and solving new mathematical models, we expect findings of this research project will help people to have a better understanding of financial products, financial investment, financial risk management and financial market itself.