**课题目的与意义：**本项目针对国际黄金价格预测问题，采用国际黄金价格机器学习系统(IGMLS, International Gold price Machine Learning System)和私人专家系统(PES, Private Expert System)相结合的方法，开发快速、精确、可行、高鲁棒性的国际黄金价格分析系统。本项目不论是对国际宏观经济和微观经济方面，还是对国家间经济活动方面都有十分重要的意义。

**任务内容：**1.阅读机器学习与外汇预测方面的经典论文

2.熟练掌握c、python语言的相关用法

3.深入学习机器学习的相关算法

4.熟练掌握数据挖掘的相关方法

5.充分了解各类金融指数的意义与相关计算

6.结合历史数据的计算分析结果和数据挖掘的结果，对国际黄金价格走势进行一定精度的预测

**课题在专业技术上的要求和具体的量化指标：**

**课题成果与形式：**

**主要参考文献：**[1]  R.P.; Simaika Y.M. Hurst, H.E.; Black. Long-term storage: an experimental study. london: Con-  stable, 1965.

[2]  J. Beran. Statistics for long-memory processes, 1994. Chapman and Hall.

[3]  G. George Batrouni Alex Hansen, Jean Schmittbuhl. Distinguishing fractional and white noise in one and two dimensions, 2001.

[4]  H.A. Rego S. Havlin A. Bunde J.W. Kantelhardt, E. Koscielny-Bunde. Detecting long-range cor- relations with detrended ゚uctuation analysis, 2001. Physica A: Statistical Mechanics and its Ap- plications.

[5]  Benoît B. Mandelbrot. The (mis)behavior of markets, 2004. A fractal view of risks, ruin and reward.

[6]  Rasheed Khaled Qian, Bo. Hurst exponent and ゙nancial market predictability, 2004. IASTED conference on Financial Engineering and Applications.

[7]  Kevin E Bassler Joseph L McCauley and Gemunu H. Gunaratne. Martingales, detrending data, and the ef゙cient market hypothesis, 2008.

[8]  Xianji; Hong Jiho; Park Namkyoo Yu, Sunkyu; Piao. Bloch-like waves in random-walk petentials based on supersymmetry, 2015-09-16. Nature Communications.

[9] Provost F, Kohavi R. Guest Editors' Introduction: On Applied Research in Machine Learning.[J]. Machine Learning, 1998, 30(2-3):127-132.

[10] Stoyanov J. Probability for Statistics and Machine Learning: Fundamentals and Advanced Topics A. DasGupta, 2011 New York, Springer xx + 782 pp., £81.00 ISBN 978-1-441-99633-6[J]. Journal of the Royal Statistical Society, 2014, 177(2):566-566.

[11] Novotný F, Raková M. Assessment of Consensus Forecasts Accuracy: The Czech National Bank Perspective[J]. Working Papers, 2010, 61(4):348-366.

[12] Shafiee S, Topal E. An overview of global gold market and gold price forecasting[J]. Resources Policy, 2010, 35(3):178–189.