**LITERATURE SURVEY**

**1) Using the Bitcoin Transaction Graph to Predict the Price of Bitcoin**

**AUTHORS:**  **Greaves, A., & Au, B.**

with diﬀerent objectives. A pre-deﬁned set of minimum qualiﬁcation

levels should be distributed between the crew members with minimum

training time diﬀerences, training expenses or a maximum of the train-

ing level with a limitation of the budget.

First, a description of the cosmonaut training process is given.

Then four models are considered for the volume planning problem.

The objective of the ﬁrst model is to minimize the diﬀerences between

the total time of the preparation of all crew members, the objective of

the second one is to minimize the training expenses with a limitation of

the training level, and the objective of the third one is to maximize the

training level with a limited budget. The fourth model considers the

problem as an 𝑛-partition problem. Then two models are considered

for the calendar planning problem.

We consider the problem of planning the ISS cosmonaut training

with diﬀerent objectives. A pre-deﬁned set of minimum qualiﬁcation

levels should be distributed between the crew members with minimum

training time diﬀerences, training expenses or a maximum of the train-

ing level with a limitation of the budget.

First, a description of the cosmonaut training process is given.

Then four models are considered for the volume planning problem.

The objective of the ﬁrst model is to minimize the diﬀerences between

the total time of the preparation of all crew members, the objective of

the second one is to minimize the training expenses with a limitation of

the training level, and the objective of the third one is to maximize the

training level with a limited budget. The fourth model considers the

problem as an 𝑛-partition problem. Then two models are considered

for the calendar planning problem

Abstract

We consider the problem of planning the ISS cosmonaut training

with diﬀerent objectives. A pre-deﬁned set of minimum qualiﬁcation

levels should be distributed between the crew members with minimum

training time diﬀerences, training expenses or a maximum of the train-

ing level with a limitation of the budget.

First, a description of the cosmonaut training process is given.

Then four models are considered for the volume planning problem.

The objective of the ﬁrst model is to minimize the diﬀerences between

the total time of the preparation of all crew members, the objective of

the second one is to minimize the training expenses with a limitation of

the training level, and the objective of the third one is to maximize the

training level with a limited budget. The fourth model considers the

problem as an 𝑛-partition problem. Then two models are considered

for the calendar planning problem

Abstract

We consider the problem of planning the ISS cosmonaut training

with diﬀerent objectives. A pre-deﬁned set of minimum qualiﬁcation

levels should be distributed between the crew members with minimum

training time diﬀerences, training expenses or a maximum of the train-

ing level with a limitation of the budget.

First, a description of the cosmonaut training process is given.

Then four models are considered for the volume planning problem.

The objective of the ﬁrst model is to minimize the diﬀerences between

the total time of the preparation of all crew members, the objective of

the second one is to minimize the training expenses with a limitation of

the training level, and the objective of the third one is to maximize the

training level with a limited budget. The fourth model considers the

problem as an 𝑛-partition problem. Then two models are considered

for the calendar planning problem

Bitcoin is the world’s leading cryptocurrency, allowing users to make transactions securely and anonymously over the Internet. In recent years, The Bitcoin the ecosystem has gained the attention of consumers, businesses, investors and speculators alike. While there has been significant research done to analyze the network topology of the Bitcoin network, limited research has been performed to analyze the network’s influence on overall Bitcoin price. In this paper, we investigate the predictive power of blockchain network-based features on the future price of Bitcoin. As a result of blockchain-networkbased feature engineering and machine learning optimization, we obtain up-down Bitcoin price movement classification accuracy of roughly 55%.

We consider the problem of planning the ISS cosmonaut training

with diﬀerent objectives. A pre-deﬁned set of minimum qualiﬁcation

levels should be distributed between the crew members with minimum

training time diﬀerences, training expenses or a maximum of the train-

ing level with a limitation of the budget.

First, a description of the cosmonaut training process is given.

Then four models are considered for the volume planning problem.

The objective of the ﬁrst model is to minimize the diﬀerences between

the total time of the preparation of all crew members, the objective of

the second one is to minimize the training expenses with a limitation of

the training level, and the objective of the third one is to maximize thetraining level with a limited budget. The fourth model considers the

problem as an 𝑛-partition problem. Then two models are considered

for the calendar planning problem.

For the volume planning problem, two algorithms are presented.

The ﬁrst one is a heuristic with a complexity of (𝑛)operations. The

second one consists of a heuristic and exact parts, and it is based on

the 𝑛-partition problem appro

# 2) CRYPTOCURRENCY VALUE FORMATION: AN EMPIRICAL ANALYSIS LEADING TO A COST OF PRODUCTION MODEL FOR VALUING BITCOIN

**AUTHORS**: Hayes, A. S.

# This paper aims to identify the likely source(s) of value that cryptocurrencies exhibit in the marketplace using cross sectional empirical data examining 66 of the most used such 'coins'. A regression model was estimated that points to three main drivers of cryptocurrency value: the difficulty in 'mining 'for coins; the rate of unit production; and the cryptographic algorithm employed. These amount to relative differences in the cost of production of one coin over another at the margin, holding all else equal. Bitcoin-denominated relative prices were used, avoiding much of the price volatility associated with the dollar exchange rate. The resulting regression model can be used to better understand the drivers of relative value observed in the emergent area of cryptocurrencies. Using the above analysis, a cost of production model is proposed for valuing bitcoin, where the primary input is electricity. This theoretical model produces useful results for both an individual producer, by setting breakeven points to start and stop production, and for the bitcoin exchange rate on a macro level. Bitcoin production seems to resemble a competitive commodity market; in theory miners will produce until their marginal costs equal their marginal product.

# 3. Economic prediction using neural networks: the case of IBM daily stock returns

**AUTHORS**: H. White

A report is presented of some results of an ongoing project using neural-network modeling and learning techniques to search for and decode nonlinear regularities in asset price movements. The author focuses on the case of IBM common stock daily returns. Having to deal with the salient features of economic data highlights the role to be played by statistical inference and requires modifications to standard learning techniques which may prove useful in other contexts

**4.** **Designing a neural network for forecasting financial and economic time series**

**AUTHORS: Kaastra and M. Boyd**

Artificial neural networks are universal and highly flexible function approximators first used in the fields of cognitive science and engineering. In recent years, neural network applications in finance for such tasks as pattern recognition, classification, and time series forecasting have dramatically increased. However, the large number of parameters that must be selected to develop a neural network forecasting model have meant that the design process still involves much trial and error. The objective of this paper is to provide a practical introductory guide in the design of a neural network for forecasting economic time series data. An eight-step procedure to design a neural network forecasting model is explained including a discussion of tradeoffs in parameter selection, some common pitfalls, and points of disagreement among practitioners.