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        Contracts to Achieve Goals by Conditioning
        with Negative Reinforcers}
66  }
67
68  \setcounter{footnote}{1}
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70  kekeho
71  \thanks{
72      Keio University, Faculty of Environment and
        Information Studies B1 \\
73      e-mail: kekeho@sfc.wide.ad.jp \\
74      Real name: Hiroki TAKEMURA \\
75      KG: Bcali
76  }
77  }
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79
80  \begin{document}
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82  \twocolumn[
83    \begin{@twocolumnfalse}
84      \maketitle
85      \begin{abstract}
86      % 人々は，何らかの目的達成のために貯金をする．
        しかし一部の意志が弱い人は，
        しばしば目の前の誘惑に駆られ，
        途中で貯金を諦めてしまう．
87      % そこで，
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Hardcore Bank

Implementing Time Deposits with Smart Contracts to Achieve Goals by Conditioning with Negative Reinforcers

kekeho †

November 19, 2022

Abstract

People save money to achieve some goal. However, some people with weak willpower are often tempted by the temptation in front of them and give up saving halfway. I devised a method to help people save money by conditioning them with negative reinforcers to solve this problem. I implemented a time deposit account with an Ethereum smart contract, in which assets decrease unless a fixed amount is deposited every month.

1 Background

People often take action of saving. For example, they save money to go abroad as an extended vacation or to save money for an emergency. However, saving is a constant struggle against the temptations in front of us. It is difficult for weak-willed people to overcome the frequent desire to splurge and achieve the target amount.

Therefore, I think that I can help users save money by conditioning them appropriately.

2 Reinforcement

In instrumental conditioning in behavioral psychology, due to the environmental phenomenon that follows the action, it is said that behavioral occurrence probability increases or decreases.

Reinforcement is a process in which the behavioral occurrence probability increases with accompanying stimulus. There are positive and negative concomitants between behavior and reinforcement.

There are two types of reinforcement, positive and negative. Positive reinforcement causes pleasant or desirable stimulus after behavioral response, and it increases the frequency of the behavioral response. Negative reinforcement removes unpleasant or disgusting stimulus after behavioral response, and makes it occur frequently of the behavioral response[1].

3 Applying Negative Reinforcement to Saving Money

I suppose that the negative reinforcement being introduced in Section 2 could contribute to achieving the target amount in savings.

I hypothesize that negative reinforcement could be achieved by happening a risk that the saved money will be lost if the user does not take action to deposit money into the piggy bank.

Based on this theory, I devised a time deposit account as follows. First, opening a time deposit account being set target amount and monthly deposit amount. Users can withdraw this account only when the remainder exceeds the target amount.If there is a month when the transfer amount is less than the set deposit amount, 20% of the remainder will be confiscated each time.

Users will be exposed to the fear of losing money they have saved. Therefore, I expect the user will take action to transfer money as planned every month in order to avoid losing the remainder. Due to this kind of negative reinforcement, I helps users save money constantly.

4 Implementation

I implement the time deposit account shown in Section 3 with an Ethereum smart contract.

4.1 ERC777 Token

The currency to be deposited is the ERC777 token[2]. ERC777 is a standard interface to represent Fungible Token in smart contracts.

As the preceding Fungible token standard, ERC20[3] has already existed. Mostly ERC20 has the following functions.

- Transfer a token from an account to another.
- Get information of the current token remainder of an account.
- Obtain the total supply of tokens on the network.
- Approve whether the amount of tokens held by an account can be used by a third-party account.

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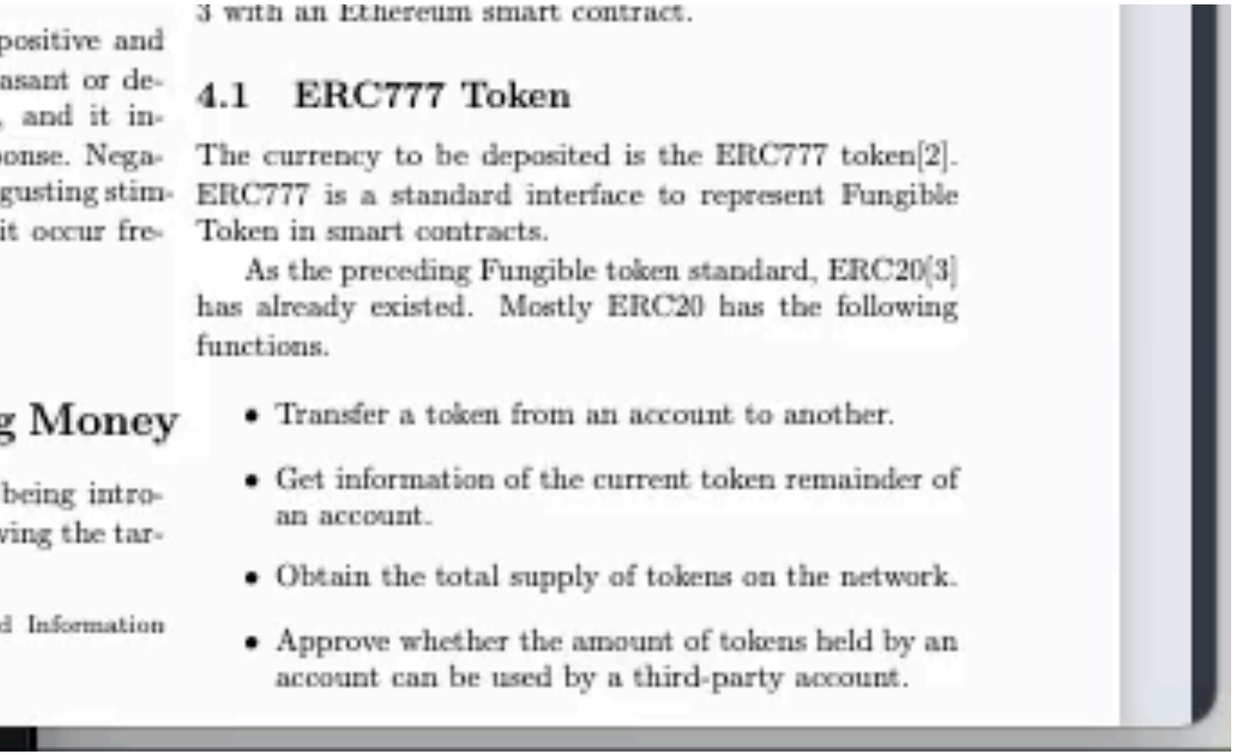

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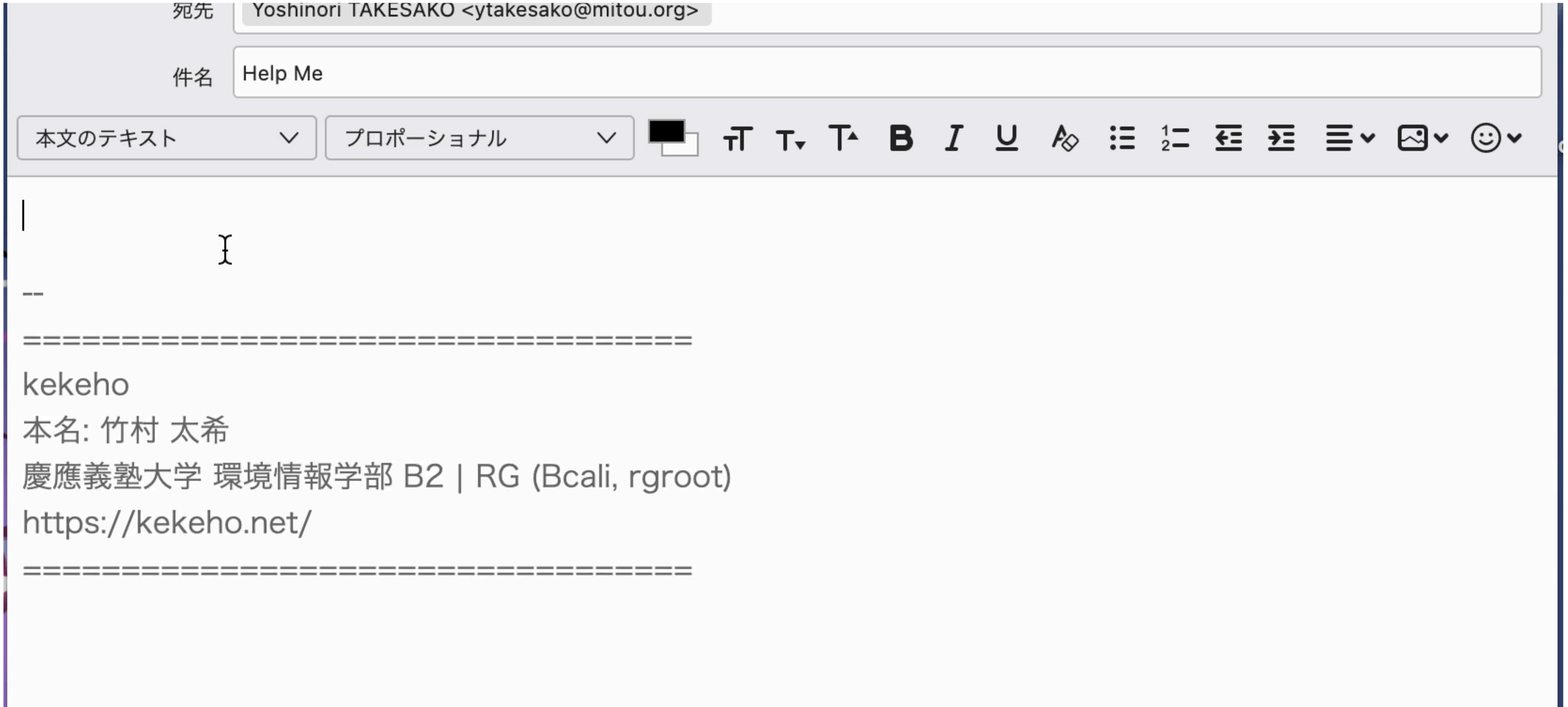
宛先
Yoshinori TAKESAKO <ytakesako@mitou.org>
件名
Help Me
本文のテキスト
プロポーショナル
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本名: 竹村 太希
慶應義塾大学 環境情報学部 B2 | RG (Bcali, rgroot)
https://kekeho.net/
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