

# Analysis of Maximal Extractable Value on the Algorand Blockchain

Jonas Gebele, January 09, 2023, Kick-off Presentation Guided Research

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1. Motivation and Background Information
2. Problem Statement
3. Research Objectives
  - 3.1. Analyze DeFi activity on Algorand for potential Maximal Extractable Value
  - 3.2. Approximate the quantity of Maximal Extractable Value on Algorand
  - 3.3. Find precedence of extracted Maximal Extractable Value on Algorand
4. Timeline

## Maximal Extractable Value (MEV)

### Flash Boys 2.0: Frontrunning, Transaction Reordering, and Consensus Instability in Decentralized Exchanges

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About	Portfolio	Opportunities	Contact
Team	Writing	Fellowship	

## Ethereum is a Dark Forest

Aug 28, 2020 | Dan Robinson, Georgios Konstantopoulos

# Motivation and Background Information

## Types of MEV

### Sandwich Attack

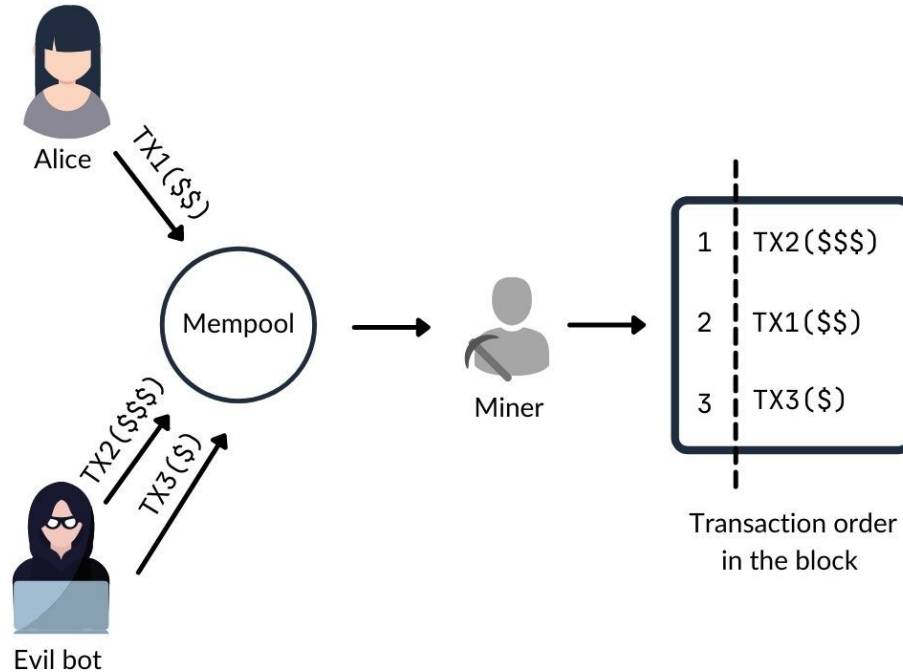
### Front Running

### Back Running

### Liquidations

### DEX Arbitrage

### Time Bandit Attack



# Motivation and Background Information

Types of MEV

**Sandwich Attack**

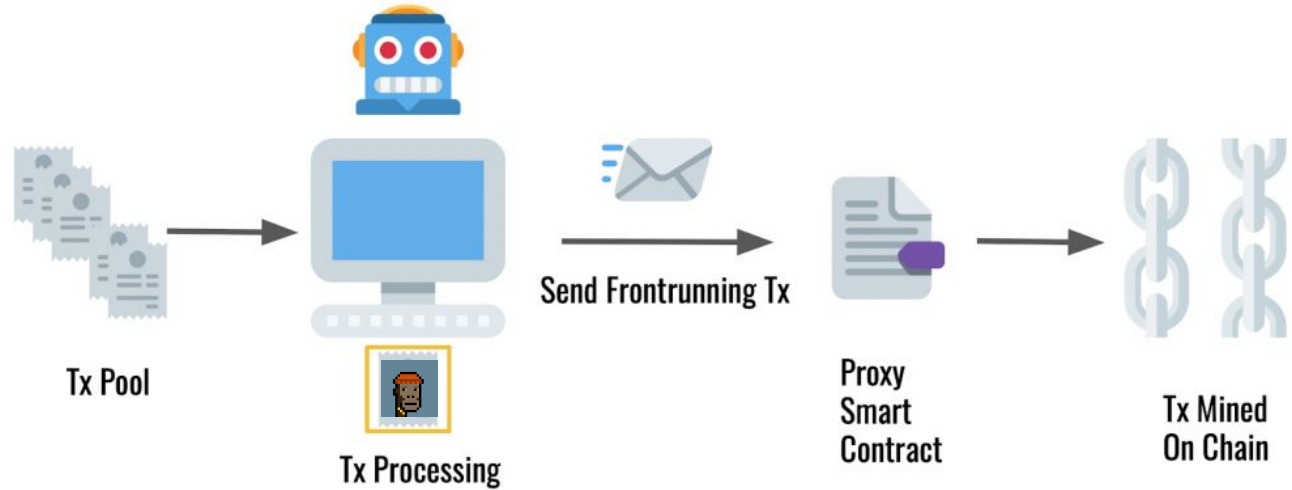
**Front Running**

**Back Running**

**Liquidations**

**DEX Arbitrage**

**Time Bandit Attack**



# Motivation and Background Information

Types of MEV

**Sandwich Attack**

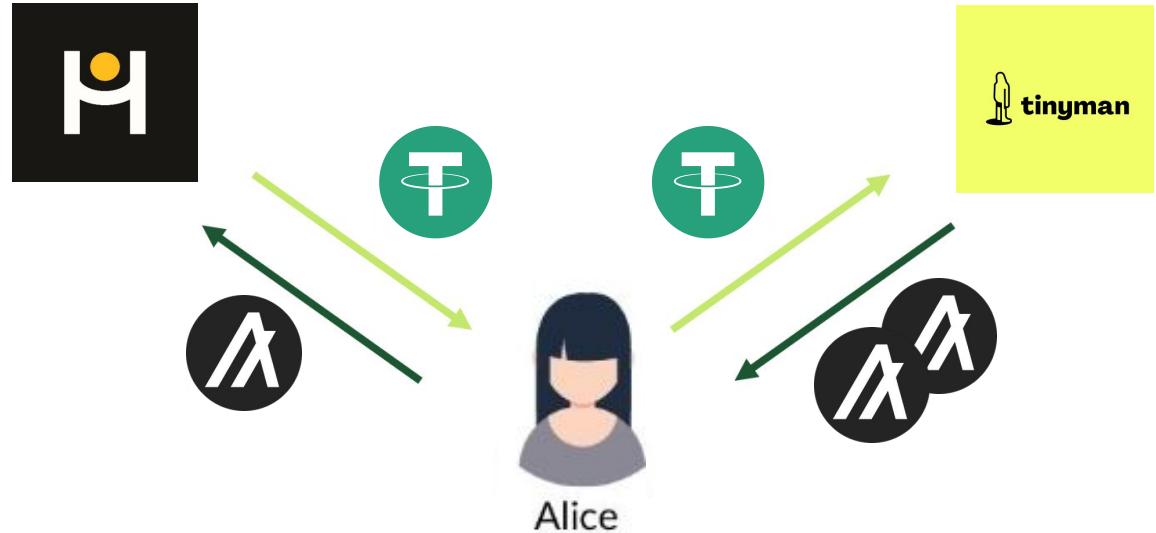
**Front Running**

**Back Running**

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**Time Bandit Attack**



**\$686,445,988**

Total Extracted MEV

**\$202,553**

Last 30 days Extracted MEV

**k**

Last 24h Extracted MEV

Cumulative Extracted MEV - Gross Profit



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# Problem Statement

## Algorand Consensus Rules



Sandwich Attack

Front Running

Back Running

Liquidations

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Time Bandit Attack



# Algorand

**NO TRANSACTION-ORDERING BY FEE**

(transaction fees go to Algorand Foundation)

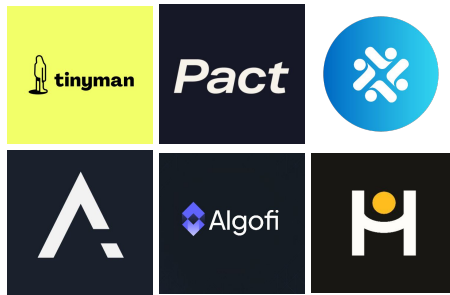
**Most MEV only exploitable by block-producers\***

(\*assuming there is no transaction-congestion and a resulting fee market)

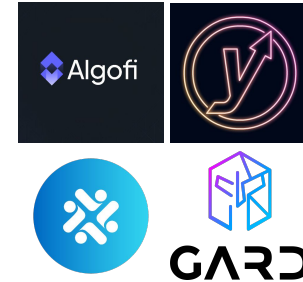
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### Analyze DeFi activity on Algorand for potential Maximal Extractable Value

#### Decentralized Exchanges



#### Lending Protocols



#### Prediction Markets







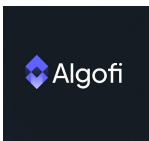



#### Option Markets



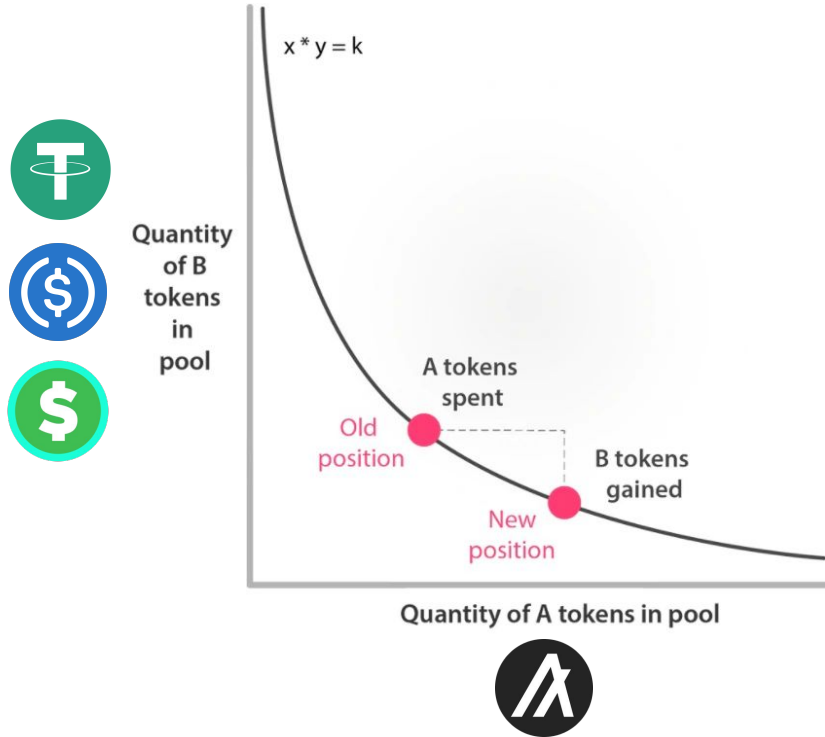
# Research Objectives

## Research Objective 2 - DEX arbitrage MEV

	24h Swap Volume	24h ALGO-USD Volume / 24h Total Volume		
	\$38'000	\$6'877'180	\$5'556'104'765	
	\$275'666			
	\$17'103	\$3'351'127	\$612'395'215	
	\$29'328			
	\$ -	\$1'125'607	\$225'173'663	

# Research Objectives

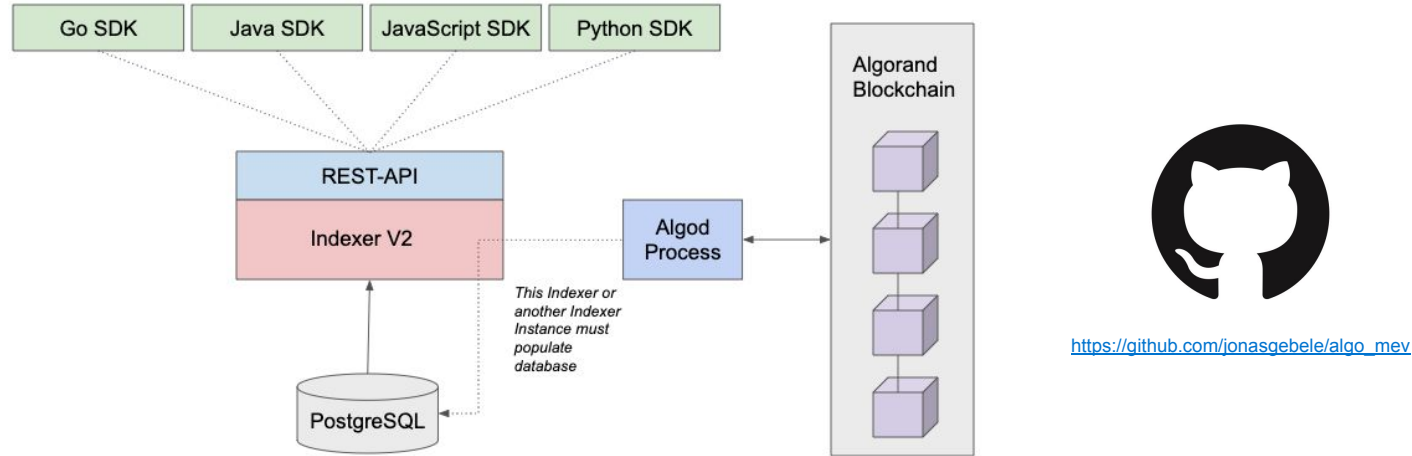
## Research Objective 2 - DEX arbitrage MEV



Price(USDT)	Size(BTC)	Total (USDT)
7500	17.355	130,162.50
7400	0.020	147.18
7300	4.539	33,134.70
7250	1.000	7,249.90
7200	269.144	1,931,154.50
7150	283.813	2,022,520.76
7100	314.581	2,228,138.87
7050	229.299	1,611,627.44
7000	395.468	2,760,509.15
6950	159.534	1,105,208.98
6900	166.535	1,146,065.85
6850	257.956	1,761,894.41
6800	598.330	4,052,466.85
6750	960.836	6,463,149.97
<b>6,701.65 ↑</b>	<b>6,698.28</b>	
6700	22.594	151,392.09
6650	447.251	2,984,777.77
6600	457.673	3,030,868.70
6550	158.721	1,043,469.27
6500	182.293	1,187,954.21
6450	181.141	1,172,942.57
6400	364.811	2,340,689.17
6350	350.398	2,231,186.14
6300	368.067	2,326,286.74
6250	213.954	1,342,399.67
6200	345.874	2,151,905.53
6150	97.428	603,337.66
6100	46.585	284,168.50
6050	0.002	12.15

# Research Objectives

## Research Objective 3 - Precedence of MEV on Algorand



Find precedence of extracted Maximal Extractable Value on Algorand

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# Timeline and Future Work

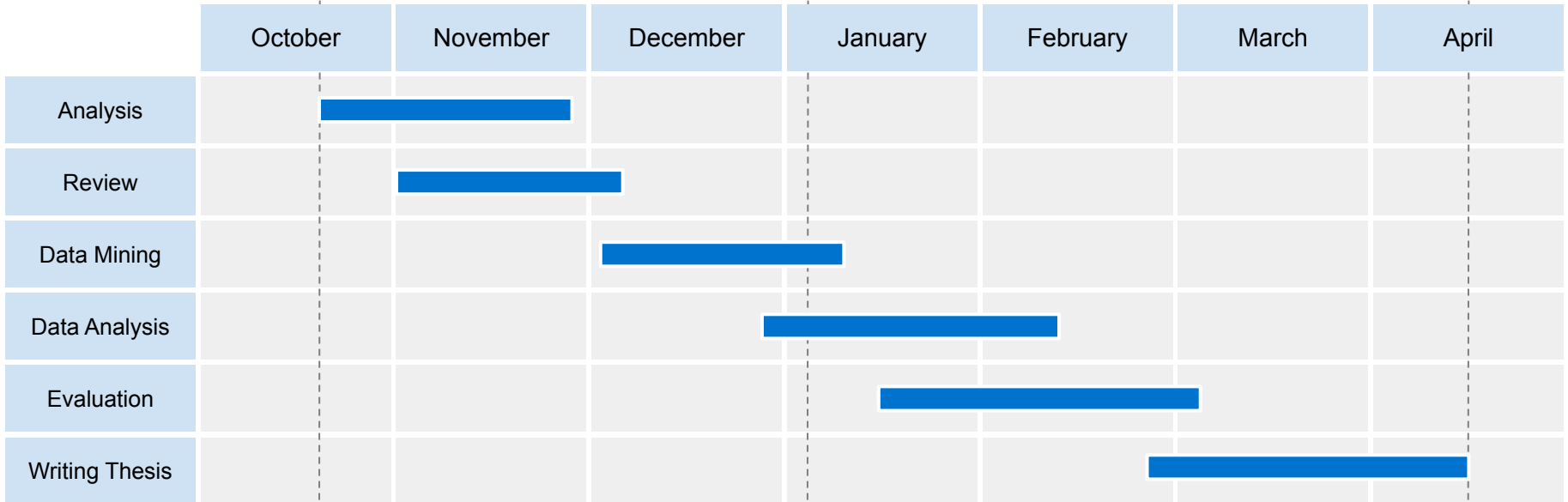
## Timeline



17. October, Registration

09. January, Kick-Off

17. April, Submission







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