

## 02\_trains\_ai\_vs\_admiral\_ai\_01\_run\_experiments

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### 1 trAIns AI vs Admiral AI - run experiments¶

Runs a series of experiments of OpenTTDLab, attempting to replicate the results from “trAIns: An Artificial Intelligence for OpenTTD” DOI 10.1109/SBGAMES.2009.15

Results are saved to 02\_trains\_ai\_vs\_admiral\_ai\_01\_raw.csv.

```
[ ]: !python -m pip install OpenTTDLab==0.0.72 pandas==2.2.0
```

```
[ ]: from openttdlab import run_experiments, bananas_ai, bananas_ai_library

def process_result(result):
    def get_company_value(player):
        try:
            return player['old_economy'][0]['company_value']
        except (KeyError, IndexError):
            return 0

    return (
        {
            'date': result['date'],
            'seed': result['experiment']['seed'],
            'terrain_type': result['chunks']['PATs']['0']['difficulty.
↳terrain_type'],
            'name': \
                'Admiral AI' if player['name'].startswith('AdmiralAI') else \
                'trAIns AI' if player['name'].startswith('trAIns AI') else \
                'Unknown',
            'company_value': get_company_value(player),
            'money': player['money'],
        }
        for player in result['chunks']['PLYR'].values()
    )

results = run_experiments(
    openttd_version='13.4',
    opengfx_version='7.1',
    experiments=(
```

```

{
    'seed': seed,
    'ais': (
        # To get a specific version of a library from BaNaNaS, we use
        ↪the full MD5 rather than
        # the actual version number.
        # trAIns 2.1
        bananas_ai('54524149', 'trAIns',
        ↪md5='c4c069dc797674e545411b59867ad0c2'),
        # AdmiralAI 25
        bananas_ai('41444d4c', 'AdmiralAI',
        ↪md5='4ccd92fb8f8f01045145be99a28e14a6', ai_params=(
            ('use_trains', '1'),
            ('use_busses', '0'),
            ('use_trucks', '0'),
            ('use_planes', '0'),
        )),
    ),
    'days': 366 * 15 + 1,
    'openttd_config': f'''
        [difficulty]
        terrain_type={terrain_type}
        number_towns=2
        industry_density=2
        max_loan=300000
        initial_interest=3
        vehicle_costs=1
        subsidy_multiplier=1
        construction_cost=1
        economy=true
        quantity_sea_lakes=0
        vehicle_breakdowns=0
        town_council_tolerance=1
        disasters=true
        line_reverse_mode=true
        [game_creation]
        starting_year=1960
        max_x=512
        max_y=512
    ''',
    }
    for seed in range(0, 2)
    for terrain_type in [1, 3]
),
result_processor=process_result,
)

```

[ ]: