

Agosto – Noviembre 2022

Optimización y Metaheurísticas II

Facultad de Ingeniería



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Contents

1. Cómputo Evolutivo

1. Algoritmos Genéticos
2. Estrategias evolutivas
3. Programación evolutiva
4. Evolución diferencial
5. Programación genética

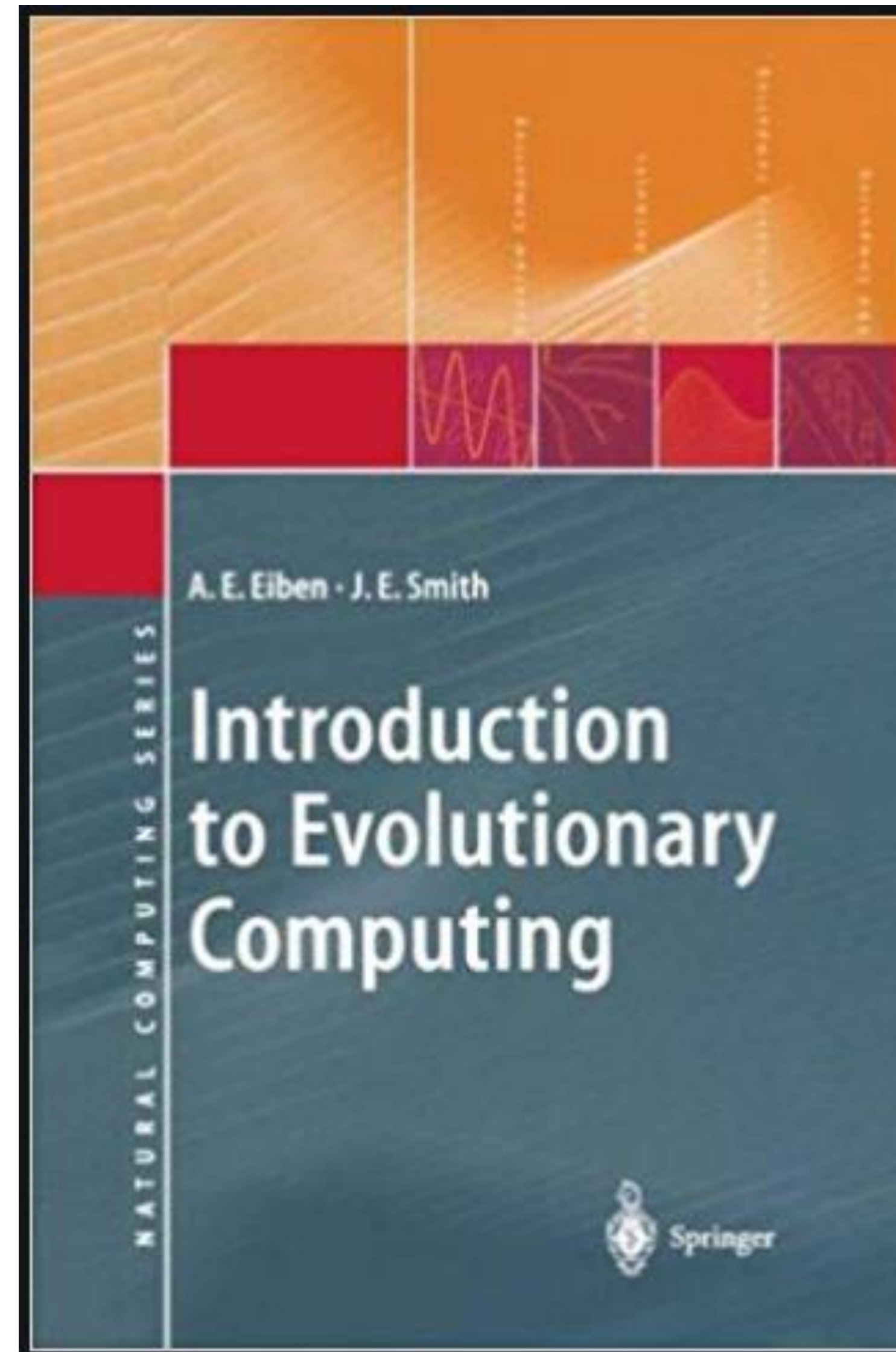
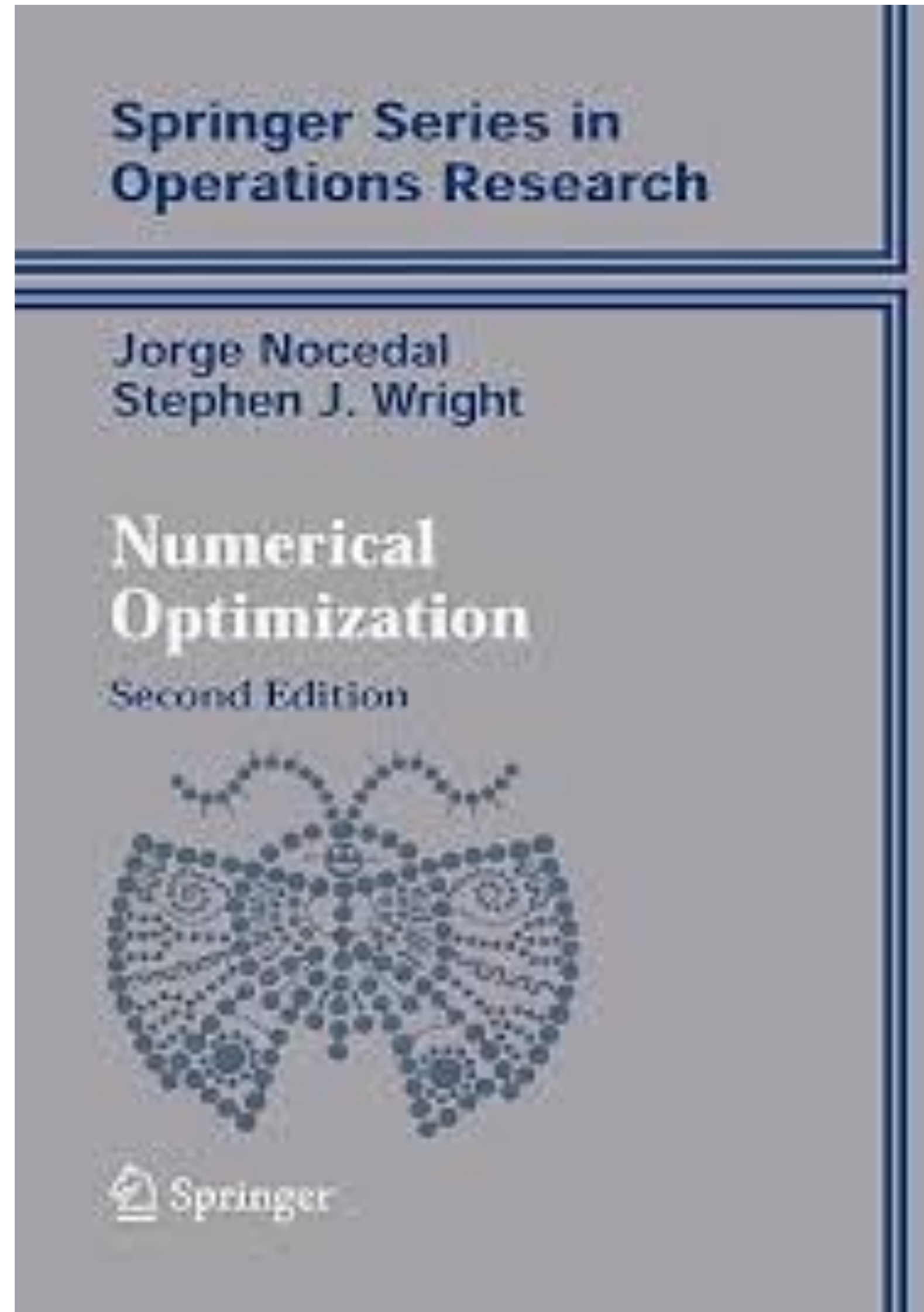
2. Algoritmos bioinspirados

1. Colonia de hormigas
2. Optimización por enjambre de partículas
3. Colonia de abejas

3. Manejo de restricciones

1. Funciones de penalización
2. Funciones de reparación

Bibliography



Evaluation

20% First partial

10% Practices and questionnaires

10% Project: Exploratory Data Analysis **September 12th**

20% Second partial

10% Practices and questionnaires

10% Project: Bill recognition by color **October 17th**

20% Third partial

10% Practices and questionnaires

10% Project: Movie's recommendation system **November 7th**

40% Final project

10% Final exam

30% Final project (10% code, 10% document, 10% presentation)

Be careful:

Universidad
Panamericana

- Homework will be evaluated the same day or the next Monday
- Practices will be done in pairs



First partial project

Sudoku September 12th

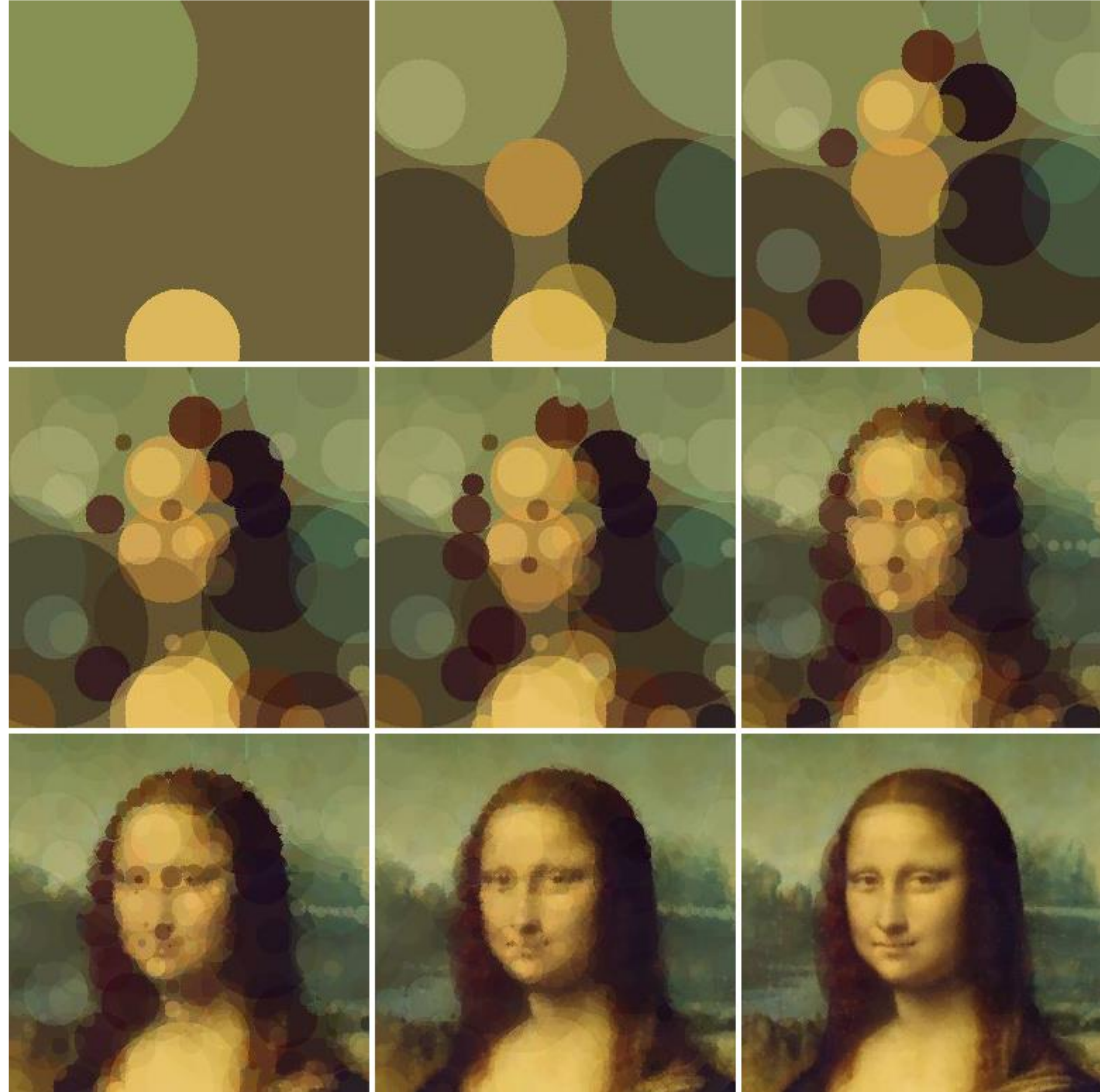
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| 2 | | | 8 | 7 | | | | 5 |
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| | 3 | | 1 | | | | 5 | |
| 7 | | 5 | | 3 | | 9 | | |
| | 2 | 1 | | | 7 | | 4 | |
| 6 | | | | 2 | | 8 | | |
| | 8 | 7 | 6 | | 4 | | | 3 |

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| 8 | 7 | 6 | 5 | 4 | 3 | 1 | 9 | 2 |
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| 1 | 9 | 8 | 7 | 6 | 5 | 3 | 2 | 4 |
| 4 | 3 | 2 | 1 | 9 | 8 | 6 | 5 | 7 |
| 7 | 6 | 5 | 4 | 3 | 2 | 9 | 8 | 1 |
| 3 | 2 | 1 | 9 | 8 | 7 | 5 | 4 | 6 |
| 6 | 5 | 4 | 3 | 2 | 1 | 8 | 7 | 9 |
| 9 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | 3 |

Second partial project

Circles in images

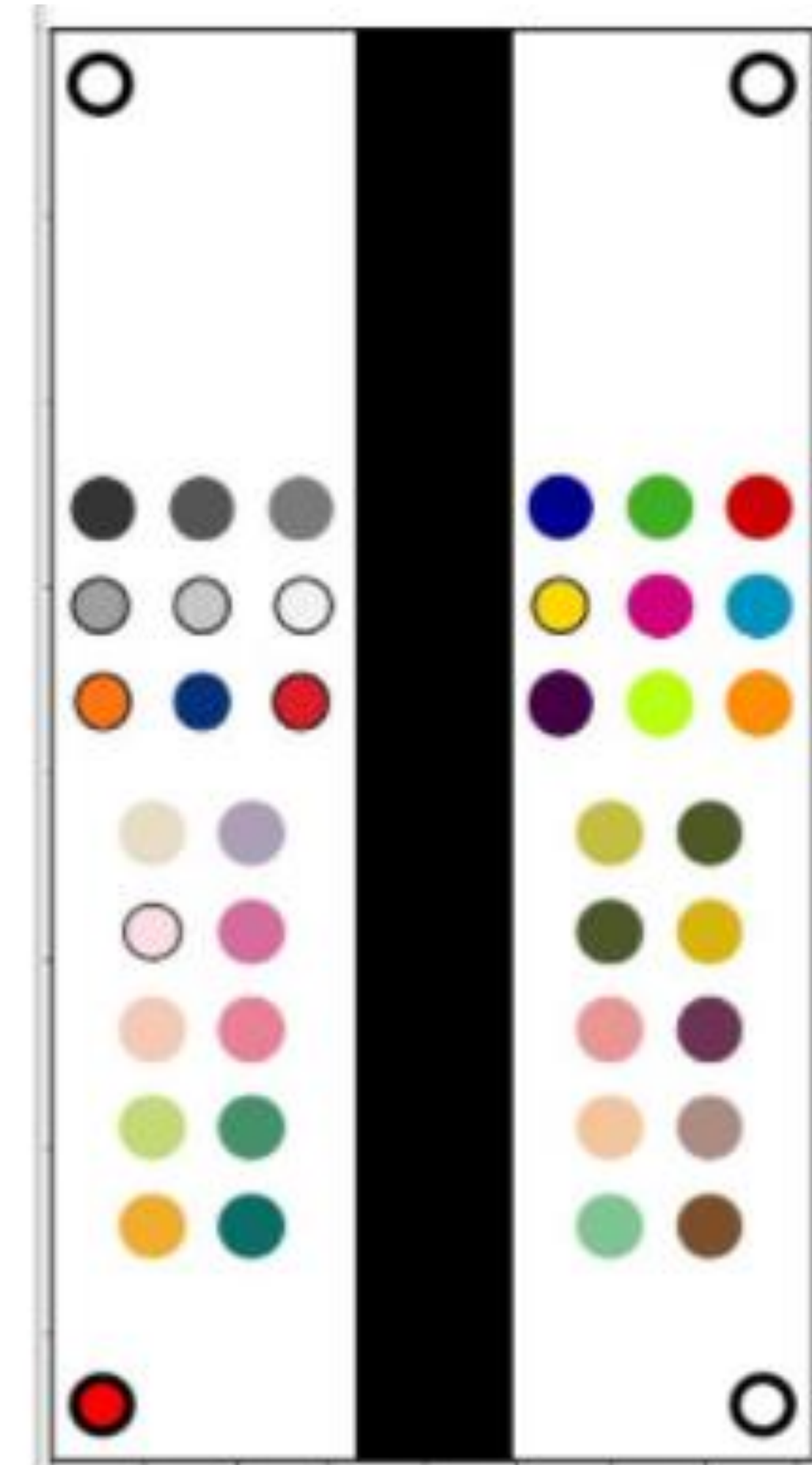
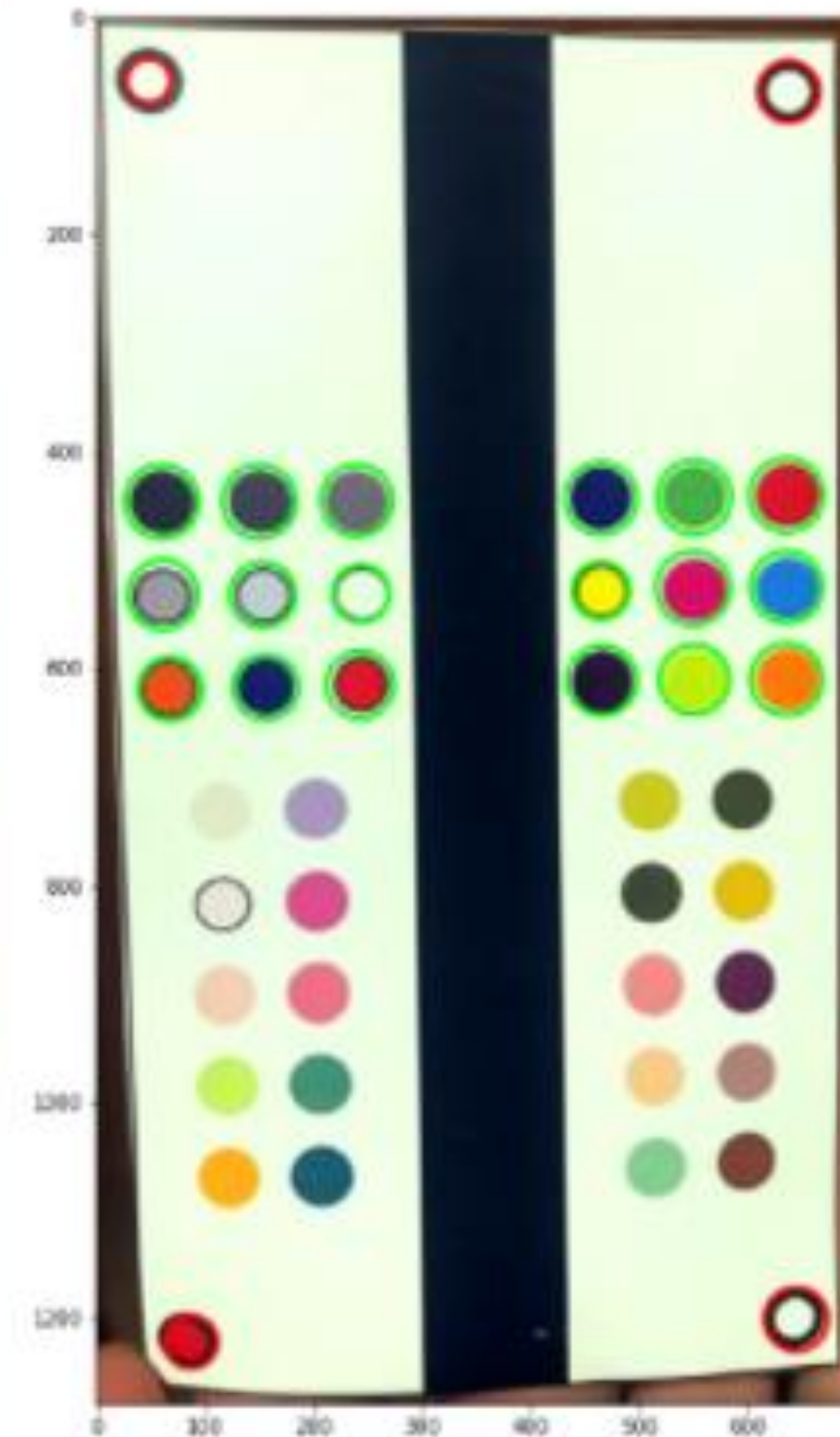
October 17th




Third partial project

Color calibration

November 7th



Platforms

- 
- Moodle
 - Python (numpy, pandas, matplotlib, scikit-learn)
 - Google colaboratory (optional)