Original graph

↓ User-independent community

Hierarchical community tree

↓ Convert Tree

Binary community tree

↓ Binary encoding

Encoding

Chromosome (community):

| 0 | 001 |

Termination

| 1 | 01 |

1 1 2 3 3 3

Community Result:
Community 1: 000, 001
Community 2: 01
Community 3: 100,1 01, 11

Initialization

| 0 | 001 |
| 0 | 01 |
...
| 1 | 101 |
| 1 | 100 |

↓ Fitness evaluation

Selection

| 0 | 001 |
| 1 | 101 |

Crossover

Before
| 0 | 001 |
| 1 | 101 |

After
| 1 | 001 |
| 0 | 101 |

Mutation

| 1 | 001 |
↓
| 1 | 01 |

(a) Offline:
binary community tree

(b) Online:
genetic pruning (Community size K = 3)