**Consumer Engagement Analytics: Clustering User Navigation Behaviour**

Evaluationsdokument zur Masterthesis MSc BA

Verfasser: Sven Lenz

MSc BA – Major Information & Data Management 2015

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Co-Referent: Prof. Dr. habil. Albert Weichselbraun

HTW Chur

[albert.weichselbraun@htwchur.ch](mailto:albert.weichselbraun@htwchur.ch)

Bearbeitung: Februar 2017 bis August 2017

Chur, 10. August 2017

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# Einleitung

Dieses Dokument beinhaltet Evaluationen der Ergebnisse aus den unterschiedlichen Modellierungen der Klickstreams für die Masterarbeit von Sven Lenz. Die Beschreibung der Modellierungen können der Masterarbeit entnommen werden. Die Outputs sind direkt aus dem Log der Programme und wurden nicht weiterverarbeitet. Jedoch kann Zwecks Nachvollziehbarkeit die folgenden Daten aus den einzelnen Kapiteln gewonnen werden:

* Clusters: Auflistung der Cluster, welche durch das DHC entstanden sind. Die Cluster sind nicht hierarchisch dargestellt, sondern wurden so aggregiert, dass möglichst drei Cluster entstehen, welche gegen die beiden Prototypen verglichen werden können.
* RESULT Lenz: Vergleich der einzelnen Cluster zum in der Masterarbeit erarbeiteten Prototypen basierend auf den Umfrageresultaten. Die einzelnen Cluster wurden in voller Kombinatorik miteinander verglichen und in diesem Dokument wird nur das Ergebnis mit dem höchsten durchschnittlichen F-Measure aufgelistet. Für jedes Cluster ist die Zuordnung zum Prototypen, sowie Precision, Recall und F-Measure ausgewiesen.
* RESULT Asendorf: Derselbe Informationsgehalt wie RESULT Lenz, jedoch basierend auf dem Vergleich zum Prototypen von Asendorf, welcher in der Masterarbeit vorgestellt wird.

# HLS1

clusters:

[8, 9, 11, 13, 14, 15, 16, 20, 25, 28, 31, 33, 35, 37, 39, 42, 43, 44, 46, 48, 49, 50, 51, 54, 57, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 78, 79, 80, 81, 82, 84, 85, 86, 88, 90, 91, 92, 93, 95, 98, 99, 102, 104, 105, 110, 111, 113, 116, 118, 120, 121, 123]

[1, 3, 4, 7, 17, 22, 23, 24, 26, 27, 29, 38, 41, 45, 47, 52, 53, 55, 56, 60, 66, 69, 75, 76, 83, 94, 97, 101, 103, 108, 109, 112, 114, 115, 122, 125]

[2, 5, 6, 10, 12, 18, 19, 21, 30, 32, 34, 36, 40, 68, 71, 77, 87, 89, 96, 100, 106, 107, 117, 119, 124, 126]

/////// RESULT Lenz/////////

avg f-measure:0.388

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [8, 9, 11, 13, 14, 15, 16, 20, 25, 28, 31, 33, 35, 37, 39, 42, 43, 44, 46, 48, 49, 50, 51, 54, 57, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 78, 79, 80, 81, 82, 84, 85, 86, 88, 90, 91, 92, 93, 95, 98, 99, 102, 104, 105, 110, 111, 113, 116, 118, 120, 121, 123]

f-measure: 0.4

precision: 0.313

recall: 0.556

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [1, 3, 4, 7, 17, 22, 23, 24, 26, 27, 29, 38, 41, 45, 47, 52, 53, 55, 56, 60, 66, 69, 75, 76, 83, 94, 97, 101, 103, 108, 109, 112, 114, 115, 122, 125]

f-measure: 0.381

precision: 0.334

recall: 0.445

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [2, 5, 6, 10, 12, 18, 19, 21, 30, 32, 34, 36, 40, 68, 71, 77, 87, 89, 96, 100, 106, 107, 117, 119, 124, 126]

f-measure: 0.383

precision: 0.654

recall: 0.27

----

/////// RESULT Asendorf /////////

avg f-measure:0.342

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [8, 9, 11, 13, 14, 15, 16, 20, 25, 28, 31, 33, 35, 37, 39, 42, 43, 44, 46, 48, 49, 50, 51, 54, 57, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 78, 79, 80, 81, 82, 84, 85, 86, 88, 90, 91, 92, 93, 95, 98, 99, 102, 104, 105, 110, 111, 113, 116, 118, 120, 121, 123]

f-measure: 0.488

precision: 0.469

recall: 0.509

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 3, 4, 7, 17, 22, 23, 24, 26, 27, 29, 38, 41, 45, 47, 52, 53, 55, 56, 60, 66, 69, 75, 76, 83, 94, 97, 101, 103, 108, 109, 112, 114, 115, 122, 125]

f-measure: 0.371

precision: 0.417

recall: 0.334

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [2, 5, 6, 10, 12, 18, 19, 21, 30, 32, 34, 36, 40, 68, 71, 77, 87, 89, 96, 100, 106, 107, 117, 119, 124, 126]

f-measure: 0.167

precision: 0.154

recall: 0.182

# HLS2

clusters:

[8, 9, 11, 13, 14, 15, 16, 20, 25, 28, 31, 33, 35, 37, 39, 42, 43, 44, 46, 48, 49, 50, 51, 54, 57, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 78, 79, 80, 81, 82, 84, 85, 86, 88, 90, 91, 92, 93, 95, 98, 99, 102, 104, 105, 110, 111, 113, 116, 118, 120, 121, 123]

[1, 3, 4, 7, 17, 22, 23, 24, 26, 27, 29, 38, 41, 45, 47, 52, 53, 55, 56, 60, 66, 69, 75, 76, 83, 94, 97, 101, 103, 108, 109, 112, 114, 115, 122, 125]

[2, 5, 6, 10, 12, 18, 19, 21, 30, 32, 34, 36, 40, 68, 71, 77, 87, 89, 96, 100, 106, 107, 117, 119, 124, 126]

/////// RESULT Lenz/////////

avg f-measure:0.388

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [8, 9, 11, 13, 14, 15, 16, 20, 25, 28, 31, 33, 35, 37, 39, 42, 43, 44, 46, 48, 49, 50, 51, 54, 57, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 78, 79, 80, 81, 82, 84, 85, 86, 88, 90, 91, 92, 93, 95, 98, 99, 102, 104, 105, 110, 111, 113, 116, 118, 120, 121, 123]

f-measure: 0.4

precision: 0.313

recall: 0.556

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [1, 3, 4, 7, 17, 22, 23, 24, 26, 27, 29, 38, 41, 45, 47, 52, 53, 55, 56, 60, 66, 69, 75, 76, 83, 94, 97, 101, 103, 108, 109, 112, 114, 115, 122, 125]

f-measure: 0.381

precision: 0.334

recall: 0.445

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [2, 5, 6, 10, 12, 18, 19, 21, 30, 32, 34, 36, 40, 68, 71, 77, 87, 89, 96, 100, 106, 107, 117, 119, 124, 126]

f-measure: 0.383

precision: 0.654

recall: 0.27

----

/////// RESULT Asendorf /////////

avg f-measure:0.342

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [8, 9, 11, 13, 14, 15, 16, 20, 25, 28, 31, 33, 35, 37, 39, 42, 43, 44, 46, 48, 49, 50, 51, 54, 57, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 78, 79, 80, 81, 82, 84, 85, 86, 88, 90, 91, 92, 93, 95, 98, 99, 102, 104, 105, 110, 111, 113, 116, 118, 120, 121, 123]

f-measure: 0.488

precision: 0.469

recall: 0.509

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 3, 4, 7, 17, 22, 23, 24, 26, 27, 29, 38, 41, 45, 47, 52, 53, 55, 56, 60, 66, 69, 75, 76, 83, 94, 97, 101, 103, 108, 109, 112, 114, 115, 122, 125]

f-measure: 0.371

precision: 0.417

recall: 0.334

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [2, 5, 6, 10, 12, 18, 19, 21, 30, 32, 34, 36, 40, 68, 71, 77, 87, 89, 96, 100, 106, 107, 117, 119, 124, 126]

f-measure: 0.167

precision: 0.154

recall: 0.182

----

# HLM1

//// CLUSTER SIZE //// 3

clusters:

[2, 3, 4, 5, 7, 15, 17, 19, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 54, 55, 58, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 77, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 102, 104, 106, 109, 112, 113, 115, 116, 117, 121, 122, 123, 124]

[1, 8, 9, 11, 13, 14, 16, 20, 22, 23, 24, 26, 27, 29, 48, 51, 52, 53, 56, 57, 60, 64, 66, 69, 75, 76, 78, 79, 86, 95, 97, 98, 103, 105, 108, 110, 111, 114, 118, 120, 125]

[6, 10, 12, 18, 30, 32, 36, 40, 68, 87, 89, 96, 100, 107, 119, 126]

/////// RESULT Lenz/////////

avg f-measure:0.317

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [6, 10, 12, 18, 30, 32, 36, 40, 68, 87, 89, 96, 100, 107, 119, 126]

f-measure: 0.193

precision: 0.313

recall: 0.139

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [2, 3, 4, 5, 7, 15, 17, 19, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 54, 55, 58, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 77, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 102, 104, 106, 109, 112, 113, 115, 116, 117, 121, 122, 123, 124]

f-measure: 0.355

precision: 0.247

recall: 0.63

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [1, 8, 9, 11, 13, 14, 16, 20, 22, 23, 24, 26, 27, 29, 48, 51, 52, 53, 56, 57, 60, 64, 66, 69, 75, 76, 78, 79, 86, 95, 97, 98, 103, 105, 108, 110, 111, 114, 118, 120, 125]

f-measure: 0.404

precision: 0.513

recall: 0.334

----

/////// RESULT Asendorf /////////

avg f-measure:0.339

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [2, 3, 4, 5, 7, 15, 17, 19, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 54, 55, 58, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 77, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 102, 104, 106, 109, 112, 113, 115, 116, 117, 121, 122, 123, 124]

f-measure: 0.457

precision: 0.377

recall: 0.578

----

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [1, 8, 9, 11, 13, 14, 16, 20, 22, 23, 24, 26, 27, 29, 48, 51, 52, 53, 56, 57, 60, 64, 66, 69, 75, 76, 78, 79, 86, 95, 97, 98, 103, 105, 108, 110, 111, 114, 118, 120, 125]

f-measure: 0.4

precision: 0.488

recall: 0.339

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [6, 10, 12, 18, 30, 32, 36, 40, 68, 87, 89, 96, 100, 107, 119, 126]

f-measure: 0.158

precision: 0.188

recall: 0.137

----

# HLM2

clusters:

[2, 3, 4, 5, 7, 15, 17, 19, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 54, 55, 58, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 77, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 102, 104, 106, 109, 112, 113, 115, 116, 117, 121, 122, 123, 124]

[1, 8, 9, 11, 13, 14, 16, 20, 22, 23, 24, 26, 27, 29, 48, 51, 52, 53, 56, 57, 60, 64, 66, 69, 75, 76, 78, 79, 86, 95, 97, 98, 103, 105, 108, 110, 111, 114, 118, 120, 125]

[6, 10, 12, 18, 30, 32, 36, 40, 68, 87, 89, 96, 100, 107, 119, 126]

/////// RESULT Lenz/////////

avg f-measure:0.317

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [6, 10, 12, 18, 30, 32, 36, 40, 68, 87, 89, 96, 100, 107, 119, 126]

f-measure: 0.193

precision: 0.313

recall: 0.139

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [2, 3, 4, 5, 7, 15, 17, 19, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 54, 55, 58, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 77, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 102, 104, 106, 109, 112, 113, 115, 116, 117, 121, 122, 123, 124]

f-measure: 0.355

precision: 0.247

recall: 0.63

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [1, 8, 9, 11, 13, 14, 16, 20, 22, 23, 24, 26, 27, 29, 48, 51, 52, 53, 56, 57, 60, 64, 66, 69, 75, 76, 78, 79, 86, 95, 97, 98, 103, 105, 108, 110, 111, 114, 118, 120, 125]

f-measure: 0.404

precision: 0.513

recall: 0.334

----

/////// RESULT Asendorf /////////

avg f-measure:0.339

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [2, 3, 4, 5, 7, 15, 17, 19, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 54, 55, 58, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 77, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 102, 104, 106, 109, 112, 113, 115, 116, 117, 121, 122, 123, 124]

f-measure: 0.457

precision: 0.377

recall: 0.578

----

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [1, 8, 9, 11, 13, 14, 16, 20, 22, 23, 24, 26, 27, 29, 48, 51, 52, 53, 56, 57, 60, 64, 66, 69, 75, 76, 78, 79, 86, 95, 97, 98, 103, 105, 108, 110, 111, 114, 118, 120, 125]

f-measure: 0.4

precision: 0.488

recall: 0.339

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [6, 10, 12, 18, 30, 32, 36, 40, 68, 87, 89, 96, 100, 107, 119, 126]

f-measure: 0.158

precision: 0.188

recall: 0.137

----

# HLN1

//// CLUSTER SIZE //// 3

clusters:

[3, 7, 15, 17, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 52, 54, 55, 56, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 75, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 104, 109, 110, 112, 113, 115, 116, 121, 122, 123, 124]

[1, 2, 4, 5, 6, 10, 12, 14, 18, 19, 22, 23, 24, 26, 27, 29, 30, 32, 36, 40, 53, 60, 66, 68, 69, 71, 76, 77, 87, 89, 96, 97, 100, 102, 103, 106, 107, 108, 114, 117, 119, 125, 126]

[8, 9, 11, 13, 16, 20, 48, 51, 57, 78, 79, 86, 95, 98, 105, 111, 118, 120]

/////// RESULT Lenz/////////

avg f-measure:0.368

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [3, 7, 15, 17, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 52, 54, 55, 56, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 75, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 104, 109, 110, 112, 113, 115, 116, 121, 122, 123, 124]

f-measure: 0.416

precision: 0.324

recall: 0.584

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [1, 2, 4, 5, 6, 10, 12, 14, 18, 19, 22, 23, 24, 26, 27, 29, 30, 32, 36, 40, 53, 60, 66, 68, 69, 71, 76, 77, 87, 89, 96, 97, 100, 102, 103, 106, 107, 108, 114, 117, 119, 125, 126]

f-measure: 0.51

precision: 0.628

recall: 0.429

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [8, 9, 11, 13, 16, 20, 48, 51, 57, 78, 79, 86, 95, 98, 105, 111, 118, 120]

f-measure: 0.178

precision: 0.223

recall: 0.149

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/////// RESULT Asendorf /////////

avg f-measure:0.354

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [3, 7, 15, 17, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 52, 54, 55, 56, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 75, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 99, 101, 104, 109, 110, 112, 113, 115, 116, 121, 122, 123, 124]

f-measure: 0.501

precision: 0.477

recall: 0.526

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 2, 4, 5, 6, 10, 12, 14, 18, 19, 22, 23, 24, 26, 27, 29, 30, 32, 36, 40, 53, 60, 66, 68, 69, 71, 76, 77, 87, 89, 96, 97, 100, 102, 103, 106, 107, 108, 114, 117, 119, 125, 126]

f-measure: 0.41

precision: 0.419

recall: 0.4

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [8, 9, 11, 13, 16, 20, 48, 51, 57, 78, 79, 86, 95, 98, 105, 111, 118, 120]

f-measure: 0.15

precision: 0.167

recall: 0.137

----

# HLN2

clusters:

[3, 7, 15, 17, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 52, 54, 55, 56, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 97, 99, 101, 104, 109, 110, 112, 113, 115, 116, 121, 122, 123, 124]

[1, 2, 4, 5, 6, 10, 12, 14, 18, 19, 22, 23, 24, 26, 27, 29, 30, 32, 36, 40, 53, 60, 66, 68, 69, 71, 76, 77, 87, 89, 96, 100, 102, 103, 106, 107, 108, 114, 117, 119, 125, 126]

[8, 9, 11, 13, 16, 20, 48, 51, 57, 75, 78, 79, 86, 95, 98, 105, 111, 118, 120]

/////// RESULT Lenz/////////

avg f-measure:0.361

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [8, 9, 11, 13, 16, 20, 48, 51, 57, 75, 78, 79, 86, 95, 98, 105, 111, 118, 120]

f-measure: 0.219

precision: 0.316

recall: 0.167

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [3, 7, 15, 17, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 52, 54, 55, 56, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 97, 99, 101, 104, 109, 110, 112, 113, 115, 116, 121, 122, 123, 124]

f-measure: 0.37

precision: 0.262

recall: 0.63

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [1, 2, 4, 5, 6, 10, 12, 14, 18, 19, 22, 23, 24, 26, 27, 29, 30, 32, 36, 40, 53, 60, 66, 68, 69, 71, 76, 77, 87, 89, 96, 100, 102, 103, 106, 107, 108, 114, 117, 119, 125, 126]

f-measure: 0.496

precision: 0.62

recall: 0.413

----

/////// RESULT Asendorf /////////

avg f-measure:0.341

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [3, 7, 15, 17, 21, 25, 28, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 52, 54, 55, 56, 58, 59, 61, 62, 63, 64, 65, 67, 70, 72, 73, 74, 80, 81, 82, 83, 84, 85, 88, 90, 91, 92, 93, 94, 97, 99, 101, 104, 109, 110, 112, 113, 115, 116, 121, 122, 123, 124]

f-measure: 0.484

precision: 0.462

recall: 0.509

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [8, 9, 11, 13, 16, 20, 48, 51, 57, 75, 78, 79, 86, 95, 98, 105, 111, 118, 120]

f-measure: 0.147

precision: 0.158

recall: 0.137

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 2, 4, 5, 6, 10, 12, 14, 18, 19, 22, 23, 24, 26, 27, 29, 30, 32, 36, 40, 53, 60, 66, 68, 69, 71, 76, 77, 87, 89, 96, 100, 102, 103, 106, 107, 108, 114, 117, 119, 125, 126]

f-measure: 0.391

precision: 0.405

recall: 0.378

# MLS1

clusters:

[1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 27, 30, 32, 36, 37, 40, 41, 42, 48, 49, 51, 52, 53, 56, 57, 64, 68, 75, 76, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 109, 110, 111, 112, 115, 116, 118, 120, 122, 124, 126]

[7, 15, 17, 21, 25, 28, 31, 33, 35, 38, 39, 43, 44, 45, 46, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 77, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 113, 121, 123, 125]

[4, 5, 23, 24, 26, 29, 54, 66, 71, 81, 103, 114, 117, 119]

[92]

[58]

[34]

/////// RESULT Lenz/////////

avg f-measure:0.335

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 27, 30, 32, 36, 37, 40, 41, 42, 48, 49, 51, 52, 53, 56, 57, 64, 68, 75, 76, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 109, 110, 111, 112, 115, 116, 118, 120, 122, 124, 126]

f-measure: 0.372

precision: 0.296

recall: 0.5

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 35, 38, 39, 43, 44, 45, 46, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 77, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 113, 121, 123, 125]

f-measure: 0.347

precision: 0.271

recall: 0.482

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [4, 5, 23, 24, 26, 29, 54, 66, 71, 81, 103, 114, 117, 119]

f-measure: 0.286

precision: 0.786

recall: 0.175

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/////// RESULT Asendorf /////////

avg f-measure:0.421

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 27, 30, 32, 36, 37, 40, 41, 42, 48, 49, 51, 52, 53, 56, 57, 64, 68, 75, 76, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 109, 110, 111, 112, 115, 116, 118, 120, 122, 124, 126]

f-measure: 0.567

precision: 0.558

recall: 0.577

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 35, 38, 39, 43, 44, 45, 46, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 77, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 113, 121, 123, 125]

f-measure: 0.474

precision: 0.459

recall: 0.489

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [4, 5, 23, 24, 26, 29, 54, 66, 71, 81, 103, 114, 117, 119]

f-measure: 0.223

precision: 0.286

recall: 0.182

----

# MLS2

clusters:

[1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 18, 19, 20, 22, 27, 29, 30, 32, 36, 37, 40, 42, 48, 49, 51, 52, 53, 56, 57, 64, 68, 75, 76, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 110, 111, 114, 115, 116, 118, 120, 122, 124, 126]

[7, 15, 17, 21, 25, 28, 31, 33, 38, 39, 41, 43, 44, 45, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 123, 125]

[4, 5, 16, 23, 24, 26, 35, 46, 54, 66, 71, 77, 80, 81, 103, 117, 119, 121]

[92]

[58]

[34]

/////// RESULT Lenz/////////

avg f-measure:0.363

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 18, 19, 20, 22, 27, 29, 30, 32, 36, 37, 40, 42, 48, 49, 51, 52, 53, 56, 57, 64, 68, 75, 76, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 110, 111, 114, 115, 116, 118, 120, 122, 124, 126]

f-measure: 0.379

precision: 0.306

recall: 0.5

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [4, 5, 16, 23, 24, 26, 35, 46, 54, 66, 71, 77, 80, 81, 103, 117, 119, 121]

f-measure: 0.297

precision: 0.667

recall: 0.191

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 38, 39, 41, 43, 44, 45, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 123, 125]

f-measure: 0.411

precision: 0.327

recall: 0.556

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/////// RESULT Asendorf /////////

avg f-measure:0.424

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 18, 19, 20, 22, 27, 29, 30, 32, 36, 37, 40, 42, 48, 49, 51, 52, 53, 56, 57, 64, 68, 75, 76, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 110, 111, 114, 115, 116, 118, 120, 122, 124, 126]

f-measure: 0.56

precision: 0.56

recall: 0.56

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 38, 39, 41, 43, 44, 45, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 123, 125]

f-measure: 0.462

precision: 0.457

recall: 0.467

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [4, 5, 16, 23, 24, 26, 35, 46, 54, 66, 71, 77, 80, 81, 103, 117, 119, 121]

f-measure: 0.25

precision: 0.278

recall: 0.228

# MLM1

clusters:

[1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 26, 27, 30, 32, 36, 37, 38, 40, 42, 48, 49, 51, 52, 53, 54, 56, 57, 64, 68, 75, 76, 77, 78, 79, 81, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 110, 111, 115, 116, 118, 120, 122, 124, 126]

[7, 15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 121, 123, 125]

[4, 5, 23, 24, 29, 66, 71, 103, 114, 117, 119]

[58]

[92]

[34]

/////// RESULT Lenz/////////

avg f-measure:0.349

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [4, 5, 23, 24, 29, 66, 71, 103, 114, 117, 119]

f-measure: 0.086

precision: 0.182

recall: 0.056

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 121, 123, 125]

f-measure: 0.422

precision: 0.327

recall: 0.593

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 26, 27, 30, 32, 36, 37, 38, 40, 42, 48, 49, 51, 52, 53, 54, 56, 57, 64, 68, 75, 76, 77, 78, 79, 81, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 110, 111, 115, 116, 118, 120, 122, 124, 126]

f-measure: 0.54

precision: 0.54

recall: 0.54

----

/////// RESULT Asendorf /////////

avg f-measure:0.355

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 26, 27, 30, 32, 36, 37, 38, 40, 42, 48, 49, 51, 52, 53, 54, 56, 57, 64, 68, 75, 76, 77, 78, 79, 81, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 110, 111, 115, 116, 118, 120, 122, 124, 126]

f-measure: 0.558

precision: 0.54

recall: 0.577

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 121, 123, 125]

f-measure: 0.447

precision: 0.429

recall: 0.467

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [4, 5, 23, 24, 29, 66, 71, 103, 114, 117, 119]

f-measure: 0.061

precision: 0.091

recall: 0.046

# MLM2

clusters:

[4, 5, 7, 15, 17, 21, 23, 24, 25, 28, 29, 30, 31, 32, 33, 34, 35, 36, 39, 41, 43, 44, 45, 46, 47, 50, 51, 55, 57, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 80, 82, 84, 85, 87, 89, 90, 91, 92, 93, 94, 95, 97, 99, 101, 103, 104, 106, 108, 109, 112, 113, 114, 117, 119, 121, 122, 123, 125]

[2, 3, 8, 9, 13, 14, 16, 19, 37, 40, 42, 48, 49, 52, 54, 56, 64, 78, 79, 81, 83, 86, 88, 98, 102, 110, 111, 116, 118, 120]

[1, 6, 10, 12, 18, 22, 26, 27, 38, 53, 75, 76, 77, 96, 100, 107, 115, 124, 126]

[11, 20, 105]

/////// RESULT Lenz/////////

avg f-measure:0.321

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [4, 5, 7, 15, 17, 21, 23, 24, 25, 28, 29, 30, 31, 32, 33, 34, 35, 36, 39, 41, 43, 44, 45, 46, 47, 50, 51, 55, 57, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 80, 82, 84, 85, 87, 89, 90, 91, 92, 93, 94, 95, 97, 99, 101, 103, 104, 106, 108, 109, 112, 113, 114, 117, 119, 121, 122, 123, 125]

f-measure: 0.377

precision: 0.257

recall: 0.704

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [2, 3, 8, 9, 13, 14, 16, 19, 37, 40, 42, 48, 49, 52, 54, 56, 64, 78, 79, 81, 83, 86, 88, 98, 102, 110, 111, 116, 118, 120]

f-measure: 0.366

precision: 0.567

recall: 0.27

----

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [1, 6, 10, 12, 18, 22, 26, 27, 38, 53, 75, 76, 77, 96, 100, 107, 115, 124, 126]

f-measure: 0.219

precision: 0.316

recall: 0.167

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/////// RESULT Asendorf /////////

avg f-measure:0.385

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [4, 5, 7, 15, 17, 21, 23, 24, 25, 28, 29, 30, 31, 32, 33, 34, 35, 36, 39, 41, 43, 44, 45, 46, 47, 50, 51, 55, 57, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 80, 82, 84, 85, 87, 89, 90, 91, 92, 93, 94, 95, 97, 99, 101, 103, 104, 106, 108, 109, 112, 113, 114, 117, 119, 121, 122, 123, 125]

f-measure: 0.555

precision: 0.446

recall: 0.734

----

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [2, 3, 8, 9, 13, 14, 16, 19, 37, 40, 42, 48, 49, 52, 54, 56, 64, 78, 79, 81, 83, 86, 88, 98, 102, 110, 111, 116, 118, 120]

f-measure: 0.405

precision: 0.6

recall: 0.306

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [1, 6, 10, 12, 18, 22, 26, 27, 38, 53, 75, 76, 77, 96, 100, 107, 115, 124, 126]

f-measure: 0.196

precision: 0.211

recall: 0.182

----

# MLN1

clusters:

[1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 26, 27, 30, 32, 36, 37, 38, 40, 42, 48, 49, 51, 52, 53, 56, 57, 58, 60, 64, 66, 68, 69, 75, 76, 77, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 111, 115, 116, 118, 124, 125, 126]

[7, 15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 50, 55, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 121, 122, 123]

[4, 5, 23, 24, 29, 54, 71, 81, 103, 110, 114, 117, 119, 120]

[92]

[34]

/////// RESULT Lenz/////////

avg f-measure:0.384

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 26, 27, 30, 32, 36, 37, 38, 40, 42, 48, 49, 51, 52, 53, 56, 57, 58, 60, 64, 66, 68, 69, 75, 76, 77, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 111, 115, 116, 118, 124, 125, 126]

f-measure: 0.405

precision: 0.318

recall: 0.556

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 50, 55, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 121, 122, 123]

f-measure: 0.46

precision: 0.362

recall: 0.63

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [4, 5, 23, 24, 29, 54, 71, 81, 103, 110, 114, 117, 119, 120]

f-measure: 0.286

precision: 0.786

recall: 0.175

----

/////// RESULT Asendorf /////////

avg f-measure:0.435

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [1, 2, 3, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 26, 27, 30, 32, 36, 37, 38, 40, 42, 48, 49, 51, 52, 53, 56, 57, 58, 60, 64, 66, 68, 69, 75, 76, 77, 78, 79, 83, 86, 87, 88, 89, 95, 96, 98, 100, 102, 105, 106, 107, 111, 115, 116, 118, 124, 125, 126]

f-measure: 0.591

precision: 0.572

recall: 0.611

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 50, 55, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 121, 122, 123]

f-measure: 0.435

precision: 0.426

recall: 0.445

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [4, 5, 23, 24, 29, 54, 71, 81, 103, 110, 114, 117, 119, 120]

f-measure: 0.278

precision: 0.358

recall: 0.228

----

# MLN2

clusters:

[7, 15, 17, 21, 25, 28, 31, 33, 39, 41, 43, 44, 45, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 122, 123, 125]

[3, 4, 5, 6, 8, 9, 13, 16, 23, 27, 29, 30, 32, 35, 42, 49, 51, 52, 54, 56, 57, 66, 68, 78, 80, 81, 86, 87, 89, 95, 96, 98, 102, 103, 105, 106, 110, 114, 116, 118, 119, 120, 121]

[1, 2, 10, 11, 12, 14, 18, 19, 20, 22, 24, 26, 36, 37, 38, 40, 46, 48, 53, 58, 64, 71, 75, 76, 77, 79, 83, 88, 100, 107, 111, 115, 117, 124, 126]

[92]

[34]

/////// RESULT Lenz/////////

avg f-measure:0.398

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [1, 2, 10, 11, 12, 14, 18, 19, 20, 22, 24, 26, 36, 37, 38, 40, 46, 48, 53, 58, 64, 71, 75, 76, 77, 79, 83, 88, 100, 107, 111, 115, 117, 124, 126]

f-measure: 0.282

precision: 0.286

recall: 0.278

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 39, 41, 43, 44, 45, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 122, 123, 125]

f-measure: 0.439

precision: 0.348

recall: 0.593

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [3, 4, 5, 6, 8, 9, 13, 16, 23, 27, 29, 30, 32, 35, 42, 49, 51, 52, 54, 56, 57, 66, 68, 78, 80, 81, 86, 87, 89, 95, 96, 98, 102, 103, 105, 106, 110, 114, 116, 118, 119, 120, 121]

f-measure: 0.472

precision: 0.582

recall: 0.397

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/////// RESULT Asendorf /////////

avg f-measure:0.371

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [7, 15, 17, 21, 25, 28, 31, 33, 39, 41, 43, 44, 45, 47, 50, 55, 59, 60, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 82, 84, 85, 90, 91, 93, 94, 97, 99, 101, 104, 108, 109, 112, 113, 122, 123, 125]

f-measure: 0.44

precision: 0.435

recall: 0.445

----

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [3, 4, 5, 6, 8, 9, 13, 16, 23, 27, 29, 30, 32, 35, 42, 49, 51, 52, 54, 56, 57, 66, 68, 78, 80, 81, 86, 87, 89, 95, 96, 98, 102, 103, 105, 106, 110, 114, 116, 118, 119, 120, 121]

f-measure: 0.393

precision: 0.466

recall: 0.339

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [1, 2, 10, 11, 12, 14, 18, 19, 20, 22, 24, 26, 36, 37, 38, 40, 46, 48, 53, 58, 64, 71, 75, 76, 77, 79, 83, 88, 100, 107, 111, 115, 117, 124, 126]

f-measure: 0.281

precision: 0.229

recall: 0.364

----

# LLS1

clusters:

[3, 5, 6, 9, 10, 12, 14, 16, 19, 22, 23, 26, 27, 29, 30, 34, 38, 40, 42, 51, 52, 53, 56, 57, 60, 66, 68, 69, 75, 76, 77, 78, 79, 83, 86, 87, 89, 92, 95, 96, 100, 102, 103, 105, 106, 110, 115, 116, 118, 119, 124, 126]

[15, 24, 25, 28, 31, 33, 35, 39, 43, 44, 46, 54, 55, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 80, 81, 82, 85, 90, 91, 93, 99, 104, 112, 113, 117, 121, 123]

[1, 2, 4, 7, 8, 11, 13, 17, 18, 20, 21, 36, 37, 41, 45, 47, 48, 49, 50, 58, 64, 88, 94, 97, 98, 101, 107, 108, 109, 111, 114, 120, 122, 125]

[32]

[84]

/////// RESULT Lenz/////////

avg f-measure:0.363

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [1, 2, 4, 7, 8, 11, 13, 17, 18, 20, 21, 36, 37, 41, 45, 47, 48, 49, 50, 58, 64, 88, 94, 97, 98, 101, 107, 108, 109, 111, 114, 120, 122, 125]

f-measure: 0.296

precision: 0.265

recall: 0.334

----

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [15, 24, 25, 28, 31, 33, 35, 39, 43, 44, 46, 54, 55, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 80, 81, 82, 85, 90, 91, 93, 99, 104, 112, 113, 117, 121, 123]

f-measure: 0.325

precision: 0.316

recall: 0.334

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [3, 5, 6, 9, 10, 12, 14, 16, 19, 22, 23, 26, 27, 29, 30, 34, 38, 40, 42, 51, 52, 53, 56, 57, 60, 66, 68, 69, 75, 76, 77, 78, 79, 83, 86, 87, 89, 92, 95, 96, 100, 102, 103, 105, 106, 110, 115, 116, 118, 119, 124, 126]

f-measure: 0.47

precision: 0.52

recall: 0.429

----

/////// RESULT Asendorf /////////

avg f-measure:0.355

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [3, 5, 6, 9, 10, 12, 14, 16, 19, 22, 23, 26, 27, 29, 30, 34, 38, 40, 42, 51, 52, 53, 56, 57, 60, 66, 68, 69, 75, 76, 77, 78, 79, 83, 86, 87, 89, 92, 95, 96, 100, 102, 103, 105, 106, 110, 115, 116, 118, 119, 124, 126]

f-measure: 0.487

precision: 0.52

recall: 0.458

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 2, 4, 7, 8, 11, 13, 17, 18, 20, 21, 36, 37, 41, 45, 47, 48, 49, 50, 58, 64, 88, 94, 97, 98, 101, 107, 108, 109, 111, 114, 120, 122, 125]

f-measure: 0.279

precision: 0.324

recall: 0.245

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [15, 24, 25, 28, 31, 33, 35, 39, 43, 44, 46, 54, 55, 59, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 80, 81, 82, 85, 90, 91, 93, 99, 104, 112, 113, 117, 121, 123]

f-measure: 0.3

precision: 0.237

recall: 0.41

# LLS2

//// CLUSTER SIZE //// 3

clusters:

[6, 12, 15, 24, 25, 26, 27, 28, 31, 32, 33, 39, 43, 44, 53, 59, 60, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 75, 76, 80, 81, 82, 84, 85, 90, 91, 93, 96, 99, 100, 104, 107, 113, 115, 117, 121, 123, 125]

[1, 5, 9, 14, 16, 17, 19, 21, 23, 29, 30, 34, 35, 40, 41, 45, 47, 50, 52, 54, 56, 57, 64, 68, 78, 79, 83, 87, 89, 92, 101, 102, 103, 105, 106, 112, 118, 119, 124, 126]

[2, 3, 4, 7, 8, 10, 11, 13, 18, 20, 22, 36, 37, 38, 42, 46, 48, 49, 51, 55, 58, 66, 69, 77, 86, 88, 94, 95, 97, 98, 108, 109, 110, 111, 114, 116, 120, 122]

/////// RESULT Lenz/////////

avg f-measure:0.376

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [6, 12, 15, 24, 25, 26, 27, 28, 31, 32, 33, 39, 43, 44, 53, 59, 60, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 75, 76, 80, 81, 82, 84, 85, 90, 91, 93, 96, 99, 100, 104, 107, 113, 115, 117, 121, 123, 125]

f-measure: 0.381

precision: 0.334

recall: 0.445

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [1, 5, 9, 14, 16, 17, 19, 21, 23, 29, 30, 34, 35, 40, 41, 45, 47, 50, 52, 54, 56, 57, 64, 68, 78, 79, 83, 87, 89, 92, 101, 102, 103, 105, 106, 112, 118, 119, 124, 126]

f-measure: 0.329

precision: 0.275

recall: 0.408

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [2, 3, 4, 7, 8, 10, 11, 13, 18, 20, 22, 36, 37, 38, 42, 46, 48, 49, 51, 55, 58, 66, 69, 77, 86, 88, 94, 95, 97, 98, 108, 109, 110, 111, 114, 116, 120, 122]

f-measure: 0.416

precision: 0.553

recall: 0.334

----

/////// RESULT Asendorf /////////

avg f-measure:0.386

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [2, 3, 4, 7, 8, 10, 11, 13, 18, 20, 22, 36, 37, 38, 42, 46, 48, 49, 51, 55, 58, 66, 69, 77, 86, 88, 94, 95, 97, 98, 108, 109, 110, 111, 114, 116, 120, 122]

f-measure: 0.454

precision: 0.579

recall: 0.373

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 5, 9, 14, 16, 17, 19, 21, 23, 29, 30, 34, 35, 40, 41, 45, 47, 50, 52, 54, 56, 57, 64, 68, 78, 79, 83, 87, 89, 92, 101, 102, 103, 105, 106, 112, 118, 119, 124, 126]

f-measure: 0.448

precision: 0.475

recall: 0.423

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [6, 12, 15, 24, 25, 26, 27, 28, 31, 32, 33, 39, 43, 44, 53, 59, 60, 61, 62, 63, 65, 67, 70, 71, 72, 73, 74, 75, 76, 80, 81, 82, 84, 85, 90, 91, 93, 96, 99, 100, 104, 107, 113, 115, 117, 121, 123, 125]

f-measure: 0.258

precision: 0.188

recall: 0.41

----

# LLM1

clusters:

[3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 23, 24, 26, 27, 29, 30, 34, 40, 42, 48, 49, 51, 52, 54, 56, 57, 68, 75, 76, 78, 79, 81, 83, 86, 87, 89, 92, 95, 96, 98, 100, 102, 103, 105, 106, 110, 114, 116, 117, 118, 119, 120, 124, 126]

[15, 25, 28, 31, 32, 33, 35, 39, 43, 44, 46, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 99, 104, 113, 121, 123]

[1, 2, 7, 17, 21, 22, 36, 37, 38, 41, 45, 47, 50, 53, 55, 58, 60, 64, 66, 69, 71, 77, 88, 94, 97, 101, 107, 108, 109, 112, 115, 122, 125]

[111]

/////// RESULT Lenz/////////

avg f-measure:0.397

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [1, 2, 7, 17, 21, 22, 36, 37, 38, 41, 45, 47, 50, 53, 55, 58, 60, 64, 66, 69, 71, 77, 88, 94, 97, 101, 107, 108, 109, 112, 115, 122, 125]

f-measure: 0.334

precision: 0.304

recall: 0.371

----

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [15, 25, 28, 31, 32, 33, 35, 39, 43, 44, 46, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 99, 104, 113, 121, 123]

f-measure: 0.348

precision: 0.364

recall: 0.334

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 23, 24, 26, 27, 29, 30, 34, 40, 42, 48, 49, 51, 52, 54, 56, 57, 68, 75, 76, 78, 79, 81, 83, 86, 87, 89, 92, 95, 96, 98, 100, 102, 103, 105, 106, 110, 114, 116, 117, 118, 119, 120, 124, 126]

f-measure: 0.509

precision: 0.526

recall: 0.493

----

/////// RESULT Asendorf /////////

avg f-measure:0.368

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 23, 24, 26, 27, 29, 30, 34, 40, 42, 48, 49, 51, 52, 54, 56, 57, 68, 75, 76, 78, 79, 81, 83, 86, 87, 89, 92, 95, 96, 98, 100, 102, 103, 105, 106, 110, 114, 116, 117, 118, 119, 120, 124, 126]

f-measure: 0.526

precision: 0.526

recall: 0.526

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 2, 7, 17, 21, 22, 36, 37, 38, 41, 45, 47, 50, 53, 55, 58, 60, 64, 66, 69, 71, 77, 88, 94, 97, 101, 107, 108, 109, 112, 115, 122, 125]

f-measure: 0.359

precision: 0.425

recall: 0.312

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [15, 25, 28, 31, 32, 33, 35, 39, 43, 44, 46, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 84, 85, 90, 91, 93, 99, 104, 113, 121, 123]

f-measure: 0.219

precision: 0.182

recall: 0.273

----

# LLM2

//// CLUSTER SIZE //// 7

clusters:

[1, 9, 11, 13, 14, 16, 17, 19, 20, 21, 23, 24, 26, 29, 30, 34, 40, 41, 45, 47, 48, 50, 52, 54, 56, 60, 64, 68, 78, 79, 81, 83, 92, 98, 101, 102, 103, 105, 106, 109, 110, 112, 117, 119, 122, 125, 126]

[2, 3, 4, 5, 6, 7, 8, 10, 12, 18, 27, 36, 37, 38, 42, 49, 51, 53, 55, 57, 66, 71, 75, 76, 86, 87, 88, 89, 94, 95, 96, 97, 100, 107, 108, 111, 114, 115, 116, 118, 120, 124]

[15, 22, 25, 28, 31, 33, 39, 43, 44, 58, 59, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 77, 80, 82, 85, 90, 91, 93, 99, 104, 113, 121, 123]

[35]

[46]

[32]

[84]

/////// RESULT Lenz/////////

avg f-measure:0.392

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [15, 22, 25, 28, 31, 33, 39, 43, 44, 58, 59, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 77, 80, 82, 85, 90, 91, 93, 99, 104, 113, 121, 123]

f-measure: 0.348

precision: 0.364

recall: 0.334

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [2, 3, 4, 5, 6, 7, 8, 10, 12, 18, 27, 36, 37, 38, 42, 49, 51, 53, 55, 57, 66, 71, 75, 76, 86, 87, 88, 89, 94, 95, 96, 97, 100, 107, 108, 111, 114, 115, 116, 118, 120, 124]

f-measure: 0.477

precision: 0.596

recall: 0.397

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [1, 9, 11, 13, 14, 16, 17, 19, 20, 21, 23, 24, 26, 29, 30, 34, 40, 41, 45, 47, 48, 50, 52, 54, 56, 60, 64, 68, 78, 79, 81, 83, 92, 98, 101, 102, 103, 105, 106, 109, 110, 112, 117, 119, 122, 125, 126]

f-measure: 0.352

precision: 0.277

recall: 0.482

----

/////// RESULT Asendorf /////////

avg f-measure:0.388

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [15, 22, 25, 28, 31, 33, 39, 43, 44, 58, 59, 61, 62, 63, 65, 67, 69, 70, 72, 73, 74, 77, 80, 82, 85, 90, 91, 93, 99, 104, 113, 121, 123]

f-measure: 0.359

precision: 0.425

recall: 0.312

----

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [2, 3, 4, 5, 6, 7, 8, 10, 12, 18, 27, 36, 37, 38, 42, 49, 51, 53, 55, 57, 66, 71, 75, 76, 86, 87, 88, 89, 94, 95, 96, 97, 100, 107, 108, 111, 114, 115, 116, 118, 120, 124]

f-measure: 0.456

precision: 0.548

recall: 0.39

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [1, 9, 11, 13, 14, 16, 17, 19, 20, 21, 23, 24, 26, 29, 30, 34, 40, 41, 45, 47, 48, 50, 52, 54, 56, 60, 64, 68, 78, 79, 81, 83, 92, 98, 101, 102, 103, 105, 106, 109, 110, 112, 117, 119, 122, 125, 126]

f-measure: 0.348

precision: 0.256

recall: 0.546

----

# NLN1C

//// CLUSTER SIZE //// 5

clusters:

[1, 8, 11, 12, 15, 18, 19, 22, 24, 26, 30, 34, 37, 39, 40, 41, 44, 45, 46, 56, 57, 58, 59, 61, 62, 64, 65, 69]

[6, 7, 10, 13, 14, 16, 20, 25, 27, 28, 29, 31, 32, 33, 35, 36, 38, 42, 43, 51, 53, 55, 60, 66, 67, 68]

[3, 5, 17, 21, 23, 47, 48, 49, 50, 52, 63]

[4, 9, 54]

[2]

/////// RESULT Lenz/////////

avg f-measure:0.34

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48]

dch: [3, 5, 17, 21, 23, 47, 48, 49, 50, 52, 63]

f-measure: 0.334

precision: 0.364

recall: 0.308

----

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52]

dch: [6, 7, 10, 13, 14, 16, 20, 25, 27, 28, 29, 31, 32, 33, 35, 36, 38, 42, 43, 51, 53, 55, 60, 66, 67, 68]

f-measure: 0.326

precision: 0.27

recall: 0.412

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50]

dch: [1, 8, 11, 12, 15, 18, 19, 22, 24, 26, 30, 34, 37, 39, 40, 41, 44, 45, 46, 56, 57, 58, 59, 61, 62, 64, 65, 69]

f-measure: 0.361

precision: 0.322

recall: 0.41

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/////// RESULT Asendorf /////////

avg f-measure:0.251

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 8, 11, 12, 15, 18, 19, 22, 24, 26, 30, 34, 37, 39, 40, 41, 44, 45, 46, 56, 57, 58, 59, 61, 62, 64, 65, 69]

f-measure: 0.302

precision: 0.393

recall: 0.245

----

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [6, 7, 10, 13, 14, 16, 20, 25, 27, 28, 29, 31, 32, 33, 35, 36, 38, 42, 43, 51, 53, 55, 60, 66, 67, 68]

f-measure: 0.33

precision: 0.539

recall: 0.238

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [3, 5, 17, 21, 23, 47, 48, 49, 50, 52, 63]

f-measure: 0.122

precision: 0.182

recall: 0.091

---

# LLN1

//// CLUSTER SIZE //// 4

clusters:

[2, 3, 4, 6, 7, 8, 10, 11, 13, 18, 20, 27, 36, 37, 40, 42, 48, 49, 51, 52, 53, 56, 57, 75, 76, 86, 87, 88, 95, 96, 97, 98, 100, 102, 105, 108, 110, 111, 114, 115, 116, 118, 120, 124]

[15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 55, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 85, 90, 91, 93, 94, 99, 101, 104, 109, 113, 117, 121, 122, 123]

[1, 5, 9, 12, 14, 16, 19, 22, 23, 24, 26, 29, 30, 34, 38, 50, 54, 58, 60, 64, 66, 68, 69, 71, 77, 78, 79, 81, 83, 84, 89, 92, 103, 106, 107, 112, 119, 125, 126]

[32]

/////// RESULT Lenz/////////

avg f-measure:0.426

prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [2, 3, 4, 6, 7, 8, 10, 11, 13, 18, 20, 27, 36, 37, 40, 42, 48, 49, 51, 52, 53, 56, 57, 75, 76, 86, 87, 88, 95, 96, 97, 98, 100, 102, 105, 108, 110, 111, 114, 115, 116, 118, 120, 124]

f-measure: 0.4

precision: 0.364

recall: 0.445

----

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 55, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 85, 90, 91, 93, 94, 99, 101, 104, 109, 113, 117, 121, 122, 123]

f-measure: 0.406

precision: 0.334

recall: 0.519

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [1, 5, 9, 12, 14, 16, 19, 22, 23, 24, 26, 29, 30, 34, 38, 50, 54, 58, 60, 64, 66, 68, 69, 71, 77, 78, 79, 81, 83, 84, 89, 92, 103, 106, 107, 112, 119, 125, 126]

f-measure: 0.471

precision: 0.616

recall: 0.381

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/////// RESULT Asendorf /////////

avg f-measure:0.401

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [2, 3, 4, 6, 7, 8, 10, 11, 13, 18, 20, 27, 36, 37, 40, 42, 48, 49, 51, 52, 53, 56, 57, 75, 76, 86, 87, 88, 95, 96, 97, 98, 100, 102, 105, 108, 110, 111, 114, 115, 116, 118, 120, 124]

f-measure: 0.525

precision: 0.614

recall: 0.458

----

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [15, 17, 21, 25, 28, 31, 33, 35, 39, 41, 43, 44, 45, 46, 47, 55, 59, 61, 62, 63, 65, 67, 70, 72, 73, 74, 80, 82, 85, 90, 91, 93, 94, 99, 101, 104, 109, 113, 117, 121, 122, 123]

f-measure: 0.414

precision: 0.429

recall: 0.4

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [1, 5, 9, 12, 14, 16, 19, 22, 23, 24, 26, 29, 30, 34, 38, 50, 54, 58, 60, 64, 66, 68, 69, 71, 77, 78, 79, 81, 83, 84, 89, 92, 103, 106, 107, 112, 119, 125, 126]

f-measure: 0.263

precision: 0.206

recall: 0.364

----

# LLN2

clusters:

[1, 5, 6, 9, 12, 13, 14, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 29, 30, 34, 38, 40, 41, 45, 47, 50, 52, 53, 54, 56, 58, 60, 64, 66, 68, 69, 71, 75, 76, 77, 78, 79, 81, 83, 84, 87, 89, 92, 96, 98, 100, 101, 102, 103, 105, 106, 107, 110, 112, 115, 117, 118, 119, 124, 125, 126]

[2, 3, 4, 7, 8, 10, 11, 15, 20, 28, 31, 33, 36, 37, 39, 42, 44, 48, 49, 51, 55, 57, 59, 62, 63, 65, 72, 73, 74, 80, 82, 85, 86, 88, 90, 93, 94, 95, 97, 99, 108, 109, 111, 114, 116, 120, 121, 122]

[35, 43, 46, 61, 67, 70, 91, 104, 113, 123]

[32]

/////// RESULT Lenz/////////

avg f-measure:0.325

prototype: [12, 20, 21, 22, 23, 25, 27, 35, 39, 41, 45, 47, 48, 55, 59, 72, 73, 79, 83, 84, 85, 89, 105, 108, 109, 112, 122]

dch: [35, 43, 46, 61, 67, 70, 91, 104, 113, 123]

f-measure: 0.055

precision: 0.1

recall: 0.038

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prototype: [3, 4, 9, 11, 14, 17, 18, 28, 31, 33, 34, 37, 38, 40, 42, 51, 52, 53, 56, 65, 70, 74, 75, 76, 80, 86, 87, 90, 98, 99, 104, 119, 121, 123, 125, 126]

dch: [2, 3, 4, 7, 8, 10, 11, 15, 20, 28, 31, 33, 36, 37, 39, 42, 44, 48, 49, 51, 55, 57, 59, 62, 63, 65, 72, 73, 74, 80, 82, 85, 86, 88, 90, 93, 94, 95, 97, 99, 108, 109, 111, 114, 116, 120, 121, 122]

f-measure: 0.381

precision: 0.334

recall: 0.445

----

prototype: [1, 2, 5, 6, 7, 8, 10, 13, 15, 16, 19, 24, 26, 29, 30, 32, 36, 43, 44, 46, 49, 50, 54, 57, 58, 60, 61, 62, 63, 64, 66, 67, 68, 69, 71, 77, 78, 81, 82, 88, 91, 92, 93, 94, 95, 96, 97, 100, 101, 102, 103, 106, 107, 110, 111, 113, 114, 115, 116, 117, 118, 120, 124]

dch: [1, 5, 6, 9, 12, 13, 14, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 29, 30, 34, 38, 40, 41, 45, 47, 50, 52, 53, 54, 56, 58, 60, 64, 66, 68, 69, 71, 75, 76, 77, 78, 79, 81, 83, 84, 87, 89, 92, 96, 98, 100, 101, 102, 103, 105, 106, 107, 110, 112, 115, 117, 118, 119, 124, 125, 126]

f-measure: 0.539

precision: 0.523

recall: 0.556

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/////// RESULT Asendorf /////////

avg f-measure:0.332

prototype: [2, 4, 15, 16, 19, 21, 22, 23, 27, 29, 30, 35, 36, 38, 39, 43, 44, 45, 47, 57, 61, 64, 66, 67, 69, 71, 72, 78, 82, 84, 85, 89, 90, 91, 94, 96, 97, 101, 103, 105, 106, 113, 114, 118, 124]

dch: [1, 5, 6, 9, 12, 13, 14, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 29, 30, 34, 38, 40, 41, 45, 47, 50, 52, 53, 54, 56, 58, 60, 64, 66, 68, 69, 71, 75, 76, 77, 78, 79, 81, 83, 84, 87, 89, 92, 96, 98, 100, 101, 102, 103, 105, 106, 107, 110, 112, 115, 117, 118, 119, 124, 125, 126]

f-measure: 0.447

precision: 0.374

recall: 0.556

----

prototype: [3, 5, 6, 7, 8, 9, 11, 13, 14, 17, 18, 24, 25, 28, 31, 33, 34, 37, 40, 42, 48, 49, 51, 52, 53, 55, 56, 58, 60, 65, 68, 70, 73, 74, 75, 76, 77, 79, 80, 83, 86, 87, 88, 95, 98, 99, 100, 104, 107, 108, 109, 115, 116, 119, 121, 122, 123, 125, 126]

dch: [2, 3, 4, 7, 8, 10, 11, 15, 20, 28, 31, 33, 36, 37, 39, 42, 44, 48, 49, 51, 55, 57, 59, 62, 63, 65, 72, 73, 74, 80, 82, 85, 86, 88, 90, 93, 94, 95, 97, 99, 108, 109, 111, 114, 116, 120, 121, 122]

f-measure: 0.486

precision: 0.542

recall: 0.441

----

prototype: [1, 10, 12, 20, 26, 32, 41, 46, 50, 54, 59, 62, 63, 81, 92, 93, 102, 110, 111, 112, 117, 120]

dch: [35, 43, 46, 61, 67, 70, 91, 104, 113, 123]

f-measure: 0.063

precision: 0.1

recall: 0.046

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