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# Lib + Model Inits

## FCM Lib Import

```
SetDirectory@NotebookDirectory[]
Needs["FCMLib`, FileNameJoin[{"../lib", "FCMLib-cur.wl"}]]
$FCMLibVersion
```

```
/Users/oosoba/Documents/RAND/Coding/fcm-fusion/socsim
```

```
Fuzzy Cognitive Map Library ver. 0.0.8
```

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# Illustrations

## Notes+Snips

## FCM Combination Demo

```
nds = {
  {1, "C1"},
  {2, "C2"},
  {3, "C3"},
  {4, "C4"}
};
nds[[;;, 2]] = Map[Style[#, 22, Bold] &, nds[[;;, 2]];

gspec1 = {{1, 1, 1}, {1, 2, 1}, {1, 3, 1}, {1, 4, 1}, {2, 3, 1}, {3, 2, 1}, {3, 4, 1}};
gspec2 = {{1, 1, 1}, {1, 2, 1}, {1, 3, 1}, {2, 3, 1}, {3, 2, 1}};
gspec3 = {{1, 2, 1}, {1, 4, 1}, {2, 4, 1}, {3, 1, 1}, {4, 3, 1}};
```

```

expFCMs = {
  Graph[FCM[nds, gspec1, 0.5],
    EdgeShapeFunction → GraphElementData["HalfFilledArrow", "ArrowSize" → 0.1]],
  Graph[FCM[nds, gspec2, 0.7], EdgeShapeFunction →
    GraphElementData["HalfFilledArrow", "ArrowSize" → 0.1]],
  Graph[FCM[nds, gspec3, 0.5], EdgeShapeFunction →
    GraphElementData["HalfFilledArrow", "ArrowSize" → 0.1]]
};

combFCM = FCMJoin[nds, expFCMs, {2, 1, 1}];
votedFCM = FCMJoinByVote[nds, expFCMs, {2, 1, 1}];
compfcms = Flatten@{
  expFCMs,
  Graph[combFCM, VertexSize → 0.4, EdgeShapeFunction →
    GraphElementData["HalfFilledArrow", "ArrowSize" → 0.1], ImageSize → 72 × 5],
  Graph[votedFCM, VertexSize → 0.5, EdgeShapeFunction →
    GraphElementData["HalfFilledArrow", "ArrowSize" → 0.1], ImageSize → 72 × 5]
};

compfcms // Dimensions
{5}

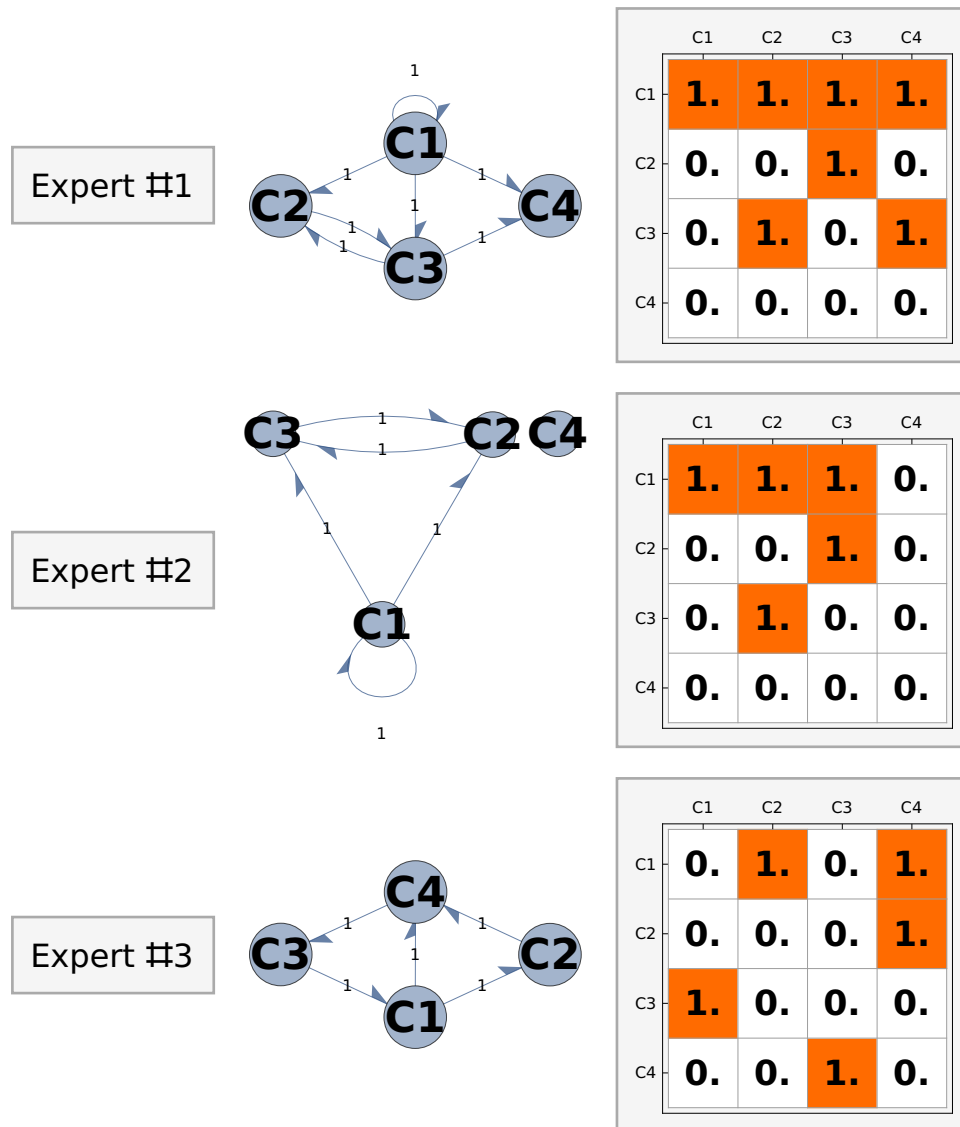
FCMat /@ compfcms[[;; 3]]
{{{1, 1, 1, 1}, {0, 0, 1, 0}, {0, 1, 0, 1}, {0, 0, 0, 0}},
 {{1, 1, 1, 0}, {0, 0, 1, 0}, {0, 1, 0, 0}, {0, 0, 0, 0}},
 {{0, 1, 0, 1}, {0, 0, 0, 1}, {1, 0, 0, 0}, {0, 0, 1, 0}}}

```

```

expsfig = Grid[
  Transpose@{
    Panel /@ (Style[#, 16] & /@ {"Expert #1", "Expert #2", "Expert #3"}),
    compfcms[;; 3],
    Panel /@
      (Show[annotatedMatrixPlot[#, ImageSize → 72 × 2.3] & /@ (FCMat /@ compfcms[;; 3])])
  },
  Spacings → {1, 1}
]
(*Export["fcm-exps.eps", expsfig]*)
Export["fcm-exps.png", expsfig]

```



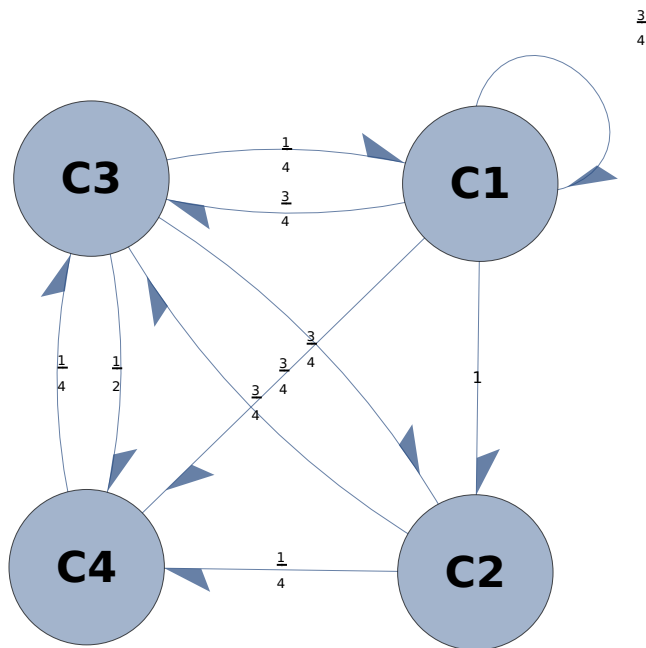
fcm-exps.png

```

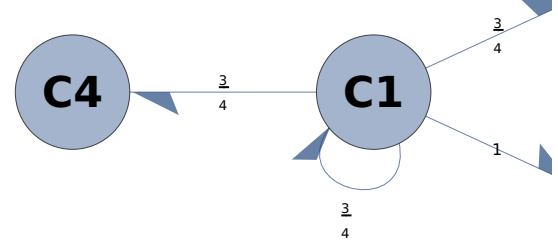
aggsfig = Grid[{
  Panel /@
    (Style[#, 16] & /@ {"Aggregation by Averaging", "Aggregation by Weighted Voting"}),
  compfcms[[-2 ;;]],
  Panel /@ (annotatedMatrixPlot /@ {FCMat@combFCM, FCMat@votedFCM})
},
  Spacings -> 0
]
(*Export["fcm-aggs.eps", aggsfig]*)
Export["fcm-aggs.png", aggsfig]

```

Aggregation by Averaging



Aggregation by Weighted Vote



	C1	C2	C3	C4
C1	0.75	1.	0.75	0.75
C2	0.	0.	0.75	0.25
C3	0.25	0.75	0.	0.5
C4	0.	0.	0.25	0.

	C1	C2	C3	C4
C1	0.75	1.	0.75	0.
C2	0.	0.	0.75	0.
C3	0.	0.75	0.	0.
C4	0.	0.	0.	0.

fcm-aggs.png

Directory[]

/Users/oosoba/Documents/RAND/Coding/fcm-fusion/socsim

## Step - by - Step Voting - Dev