**Classification with Random Forest Classifier:**

=== Run information ===

Scheme: weka.classifiers.trees.RandomForest -P 100 -I 100 -num-slots 1 -K 0 -M 1.0 -V 0.001 -S 1

Relation: DatasetForWeka13Feb2020 - Sheet1

Instances: 391

Attributes: 30

Name

NumAttr

NumOps

NumPubOps

Setters

Getters

Nesting

IFImpl

NOC

NumDesc

NumAnc

DIT

CLD

OpsInh

AttrInh

Dep\_Out

Dep\_In

NumAssEl\_ssc

NumAssEl\_sb

NumAssEl\_nsb

EC\_Attr

IC\_Attr

EC\_Par

IC\_Par

EndWithManager, Controller

HasType, Annotation, List

EndWithFactory, Impl, Implementation

IsEntity

Confidence level

Role Stereotypes

Test mode: 10-fold cross-validation

=== Classifier model (full training set) ===

RandomForest

Bagging with 100 iterations and base learner

weka.classifiers.trees.RandomTree -K 0 -M 1.0 -V 0.001 -S 1 -do-not-check-capabilities

Time taken to build model: 0.5 seconds

=== Predictions on test data ===

inst#,actual,predicted,error,prediction

1,2:two,1:one,+,0.322

2,2:two,1:one,+,0.386

3,2:two,1:one,+,0.354

4,1:one,1:one,,0.413

5,1:one,1:one,,0.519

6,1:one,1:one,,0.544

7,1:one,1:one,,0.686

8,1:one,1:one,,0.728

9,1:one,1:one,,0.598

10,1:one,1:one,,0.365

11,1:one,1:one,,0.454

12,1:one,1:one,,0.454

13,1:one,1:one,,0.563

14,1:one,1:one,,0.733

15,1:one,1:one,,0.715

16,1:one,1:one,,0.449

17,1:one,1:one,,0.648

18,1:one,1:one,,0.724

19,1:one,1:one,,0.575

20,1:one,1:one,,0.693

21,3:three,1:one,+,0.397

22,3:three,3:three,,0.415

23,3:three,3:three,,0.387

24,3:three,3:three,,0.55

25,3:three,3:three,,0.43

26,3:three,3:three,,0.517

27,3:three,3:three,,0.547

28,3:three,1:one,+,0.406

29,3:three,1:one,+,0.43

30,3:three,3:three,,0.392

31,5:six,1:one,+,0.394

32,5:six,1:one,+,0.441

33,5:six,1:one,+,0.379

34,5:six,1:one,+,0.349

35,5:six,1:one,+,0.465

36,4:four,4:four,,0.552

37,4:four,1:one,+,0.657

38,4:four,1:one,+,0.439

39,6:five,1:one,+,0.38

40,6:five,1:one,+,0.33

1,2:two,1:one,+,0.371

2,2:two,1:one,+,0.422

3,2:two,1:one,+,0.411

4,1:one,3:three,+,0.384

5,1:one,3:three,+,0.376

6,1:one,1:one,,0.643

7,1:one,1:one,,0.713

8,1:one,1:one,,0.712

9,1:one,1:one,,0.535

10,1:one,1:one,,0.572

11,1:one,1:one,,0.564

12,1:one,1:one,,0.582

13,1:one,1:one,,0.665

14,1:one,1:one,,0.652

15,1:one,1:one,,0.728

16,1:one,1:one,,0.671

17,1:one,3:three,+,0.552

18,1:one,1:one,,0.663

19,1:one,1:one,,0.52

20,1:one,1:one,,0.69

21,3:three,1:one,+,0.538

22,3:three,3:three,,0.319

23,3:three,1:one,+,0.485

24,3:three,3:three,,0.49

25,3:three,3:three,,0.604

26,3:three,3:three,,0.478

27,3:three,3:three,,0.647

28,3:three,3:three,,0.653

29,3:three,3:three,,0.544

30,3:three,3:three,,0.661

31,5:six,3:three,+,0.329

32,5:six,1:one,+,0.437

33,5:six,3:three,+,0.331

34,5:six,1:one,+,0.379

35,5:six,5:six,,0.459

36,4:four,4:four,,0.412

37,4:four,4:four,,0.451

38,4:four,4:four,,0.452

39,6:five,1:one,+,0.395

1,2:two,1:one,+,0.627

2,2:two,1:one,+,0.368

3,2:two,2:two,,0.332

4,1:one,1:one,,0.337

5,1:one,1:one,,0.68

6,1:one,1:one,,0.337

7,1:one,1:one,,0.455

8,1:one,1:one,,0.728

9,1:one,1:one,,0.682

10,1:one,1:one,,0.365

11,1:one,1:one,,0.716

12,1:one,1:one,,0.658

13,1:one,1:one,,0.735

14,1:one,1:one,,0.464

15,1:one,1:one,,0.65

16,1:one,1:one,,0.404

17,1:one,1:one,,0.315

18,1:one,1:one,,0.355

19,1:one,1:one,,0.404

20,1:one,3:three,+,0.344

21,3:three,3:three,,0.572

22,3:three,3:three,,0.619

23,3:three,3:three,,0.402

24,3:three,3:three,,0.617

25,3:three,1:one,+,0.421

26,3:three,1:one,+,0.545

27,3:three,3:three,,0.576

28,3:three,1:one,+,0.411

29,3:three,3:three,,0.433

30,3:three,3:three,,0.51

31,5:six,5:six,,0.388

32,5:six,1:one,+,0.353

33,5:six,1:one,+,0.497

34,5:six,3:three,+,0.331

35,5:six,1:one,+,0.361

36,4:four,4:four,,0.451

37,4:four,4:four,,0.547

38,4:four,1:one,+,0.428

39,6:five,1:one,+,0.483

1,2:two,1:one,+,0.452

2,2:two,1:one,+,0.287

3,2:two,1:one,+,0.287

4,1:one,1:one,,0.719

5,1:one,1:one,,0.411

6,1:one,1:one,,0.753

7,1:one,1:one,,0.472

8,1:one,1:one,,0.763

9,1:one,1:one,,0.457

10,1:one,1:one,,0.518

11,1:one,1:one,,0.464

12,1:one,1:one,,0.564

13,1:one,1:one,,0.772

14,1:one,1:one,,0.446

15,1:one,1:one,,0.744

16,1:one,1:one,,0.614

17,1:one,1:one,,0.437

18,1:one,3:three,+,0.336

19,1:one,1:one,,0.503

20,1:one,1:one,,0.725

21,3:three,1:one,+,0.538

22,3:three,3:three,,0.509

23,3:three,3:three,,0.462

24,3:three,1:one,+,0.575

25,3:three,1:one,+,0.361

26,3:three,1:one,+,0.357

27,3:three,3:three,,0.607

28,3:three,3:three,,0.605

29,3:three,3:three,,0.439

30,3:three,3:three,,0.694

31,5:six,3:three,+,0.322

32,5:six,3:three,+,0.4

33,5:six,5:six,,0.316

34,5:six,3:three,+,0.325

35,5:six,5:six,,0.433

36,4:four,3:three,+,0.325

37,4:four,1:one,+,0.515

38,4:four,4:four,,0.507

39,6:five,1:one,+,0.361

1,2:two,1:one,+,0.484

2,2:two,1:one,+,0.487

3,2:two,1:one,+,0.56

4,1:one,1:one,,0.457

5,1:one,1:one,,0.741

6,1:one,1:one,,0.724

7,1:one,1:one,,0.73

8,1:one,1:one,,0.748

9,1:one,1:one,,0.609

10,1:one,3:three,+,0.353

11,1:one,1:one,,0.664

12,1:one,1:one,,0.656

13,1:one,1:one,,0.494

14,1:one,1:one,,0.739

15,1:one,3:three,+,0.42

16,1:one,1:one,,0.71

17,1:one,3:three,+,0.399

18,1:one,1:one,,0.678

19,1:one,1:one,,0.647

20,1:one,1:one,,0.52

21,3:three,3:three,,0.44

22,3:three,1:one,+,0.435

23,3:three,3:three,,0.52

24,3:three,3:three,,0.47

25,3:three,3:three,,0.439

26,3:three,3:three,,0.584

27,3:three,3:three,,0.606

28,3:three,1:one,+,0.441

29,3:three,3:three,,0.434

30,3:three,3:three,,0.61

31,5:six,5:six,,0.467

32,5:six,1:one,+,0.477

33,5:six,1:one,+,0.344

34,5:six,5:six,,0.375

35,5:six,3:three,+,0.317

36,4:four,3:three,+,0.374

37,4:four,4:four,,0.614

38,4:four,4:four,,0.54

39,6:five,1:one,+,0.269

1,2:two,1:one,+,0.467

2,2:two,2:two,,0.338

3,2:two,1:one,+,0.669

4,1:one,1:one,,0.374

5,1:one,1:one,,0.637

6,1:one,1:one,,0.474

7,1:one,1:one,,0.733

8,1:one,1:one,,0.43

9,1:one,1:one,,0.704

10,1:one,1:one,,0.552

11,1:one,1:one,,0.493

12,1:one,1:one,,0.703

13,1:one,1:one,,0.532

14,1:one,1:one,,0.548

15,1:one,1:one,,0.551

16,1:one,1:one,,0.42

17,1:one,1:one,,0.522

18,1:one,1:one,,0.629

19,1:one,1:one,,0.694

20,3:three,1:one,+,0.464

21,3:three,1:one,+,0.483

22,3:three,3:three,,0.601

23,3:three,1:one,+,0.37

24,3:three,1:one,+,0.412

25,3:three,1:one,+,0.337

26,3:three,3:three,,0.625

27,3:three,3:three,,0.57

28,3:three,1:one,+,0.411

29,3:three,3:three,,0.645

30,3:three,1:one,+,0.382

31,5:six,3:three,+,0.322

32,5:six,1:one,+,0.392

33,5:six,1:one,+,0.409

34,5:six,1:one,+,0.551

35,4:four,4:four,,0.458

36,4:four,4:four,,0.397

37,4:four,4:four,,0.489

38,4:four,4:four,,0.47

39,6:five,1:one,+,0.42

1,2:two,1:one,+,0.681

2,2:two,1:one,+,0.48

3,2:two,2:two,,0.337

4,1:one,1:one,,0.69

5,1:one,1:one,,0.495

6,1:one,1:one,,0.747

7,1:one,1:one,,0.412

8,1:one,1:one,,0.574

9,1:one,1:one,,0.458

10,1:one,1:one,,0.659

11,1:one,1:one,,0.732

12,1:one,1:one,,0.62

13,1:one,1:one,,0.437

14,1:one,5:six,+,0.432

15,1:one,1:one,,0.695

16,1:one,1:one,,0.745

17,1:one,1:one,,0.763

18,1:one,1:one,,0.746

19,1:one,1:one,,0.524

20,3:three,3:three,,0.628

21,3:three,3:three,,0.645

22,3:three,3:three,,0.35

23,3:three,1:one,+,0.381

24,3:three,1:one,+,0.531

25,3:three,3:three,,0.616

26,3:three,1:one,+,0.38

27,3:three,3:three,,0.322

28,3:three,3:three,,0.633

29,3:three,3:three,,0.552

30,3:three,5:six,+,0.368

31,5:six,3:three,+,0.417

32,5:six,5:six,,0.337

33,5:six,1:one,+,0.418

34,5:six,1:one,+,0.335

35,4:four,1:one,+,0.466

36,4:four,1:one,+,0.353

37,4:four,4:four,,0.455

38,4:four,4:four,,0.462

39,6:five,1:one,+,0.583

1,2:two,1:one,+,0.347

2,2:two,3:three,+,0.474

3,2:two,1:one,+,0.724

4,1:one,1:one,,0.321

5,1:one,1:one,,0.704

6,1:one,1:one,,0.396

7,1:one,1:one,,0.441

8,1:one,1:one,,0.738

9,1:one,1:one,,0.449

10,1:one,1:one,,0.356

11,1:one,1:one,,0.71

12,1:one,1:one,,0.749

13,1:one,1:one,,0.733

14,1:one,1:one,,0.509

15,1:one,1:one,,0.735

16,1:one,1:one,,0.513

17,1:one,1:one,,0.738

18,1:one,1:one,,0.489

19,1:one,1:one,,0.513

20,3:three,1:one,+,0.362

21,3:three,3:three,,0.36

22,3:three,3:three,,0.423

23,3:three,1:one,+,0.414

24,3:three,3:three,,0.536

25,3:three,3:three,,0.407

26,3:three,3:three,,0.602

27,3:three,3:three,,0.675

28,3:three,3:three,,0.551

29,3:three,1:one,+,0.663

30,3:three,3:three,,0.66

31,5:six,1:one,+,0.334

32,5:six,1:one,+,0.312

33,5:six,1:one,+,0.342

34,5:six,1:one,+,0.763

35,4:four,4:four,,0.579

36,4:four,4:four,,0.45

37,4:four,3:three,+,0.282

38,4:four,1:one,+,0.554

39,6:five,3:three,+,0.55

1,2:two,1:one,+,0.378

2,2:two,1:one,+,0.45

3,1:one,1:one,,0.712

4,1:one,1:one,,0.481

5,1:one,1:one,,0.694

6,1:one,1:one,,0.542

7,1:one,1:one,,0.686

8,1:one,1:one,,0.689

9,1:one,1:one,,0.37

10,1:one,1:one,,0.692

11,1:one,1:one,,0.686

12,1:one,1:one,,0.439

13,1:one,1:one,,0.71

14,1:one,1:one,,0.527

15,1:one,1:one,,0.471

16,1:one,3:three,+,0.403

17,1:one,1:one,,0.592

18,1:one,1:one,,0.648

19,1:one,3:three,+,0.4

20,3:three,1:one,+,0.374

21,3:three,3:three,,0.327

22,3:three,3:three,,0.61

23,3:three,3:three,,0.522

24,3:three,1:one,+,0.699

25,3:three,1:one,+,0.372

26,3:three,3:three,,0.587

27,3:three,1:one,+,0.349

28,3:three,1:one,+,0.442

29,3:three,1:one,+,0.392

30,5:six,1:one,+,0.412

31,5:six,5:six,,0.417

32,5:six,5:six,,0.339

33,5:six,1:one,+,0.52

34,5:six,1:one,+,0.37

35,4:four,4:four,,0.484

36,4:four,4:four,,0.341

37,4:four,4:four,,0.472

38,6:five,1:one,+,0.432

39,6:five,1:one,+,0.391

1,2:two,1:one,+,0.302

2,2:two,1:one,+,0.302

3,1:one,1:one,,0.518

4,1:one,1:one,,0.545

5,1:one,1:one,,0.423

6,1:one,1:one,,0.648

7,1:one,1:one,,0.592

8,1:one,1:one,,0.548

9,1:one,1:one,,0.749

10,1:one,1:one,,0.723

11,1:one,1:one,,0.328

12,1:one,1:one,,0.429

13,1:one,1:one,,0.606

14,1:one,1:one,,0.665

15,1:one,1:one,,0.559

16,1:one,1:one,,0.33

17,1:one,1:one,,0.742

18,1:one,1:one,,0.486

19,1:one,1:one,,0.486

20,3:three,3:three,,0.323

21,3:three,1:one,+,0.414

22,3:three,3:three,,0.502

23,3:three,1:one,+,0.431

24,3:three,3:three,,0.589

25,3:three,1:one,+,0.514

26,3:three,1:one,+,0.466

27,3:three,3:three,,0.4

28,3:three,3:three,,0.575

29,3:three,3:three,,0.612

30,5:six,1:one,+,0.295

31,5:six,1:one,+,0.565

32,5:six,1:one,+,0.417

33,5:six,1:one,+,0.331

34,5:six,5:six,,0.441

35,4:four,1:one,+,0.332

36,4:four,4:four,,0.45

37,4:four,4:four,,0.381

38,6:five,1:one,+,0.355

39,6:five,1:one,+,0.273

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 256 65.4731 %

Incorrectly Classified Instances 135 34.5269 %

Kappa statistic 0.4618

Mean absolute error 0.19

Root mean squared error 0.2876

Relative absolute error 78.8993 %

Root relative squared error 82.9975 %

Total Number of Instances 391

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.934 0.487 0.589 0.934 0.722 0.474 0.882 0.838 one

0.107 0.000 1.000 0.107 0.194 0.317 0.873 0.595 two

0.631 0.083 0.730 0.631 0.677 0.575 0.873 0.798 three

0.667 0.000 1.000 0.667 0.800 0.804 0.943 0.878 four

0.213 0.006 0.833 0.213 0.339 0.390 0.873 0.627 six

0.000 0.000 ? 0.000 ? ? 0.872 0.415 five

Weighted Avg. 0.655 0.230 ? 0.655 ? ? 0.882 0.774

=== Confusion Matrix ===

a b c d e f <-- classified as

156 0 10 0 1 0 | a = one

24 3 1 0 0 0 | b = two

37 0 65 0 1 0 | c = three

8 0 3 22 0 0 | d = four

28 0 9 0 10 0 | e = six

12 0 1 0 0 0 | f = five