Introduction to Scientific Working

Aart Middeldorp

Outline

1. **Organisation**
2. **TikZ**
3. **Conferences**
4. **LaTeX**
5. **Homework**

Keywords

acknowledgement · awards · beamer · bibliography · CORE ranking · DBLP · conference · editorial board · generative AI · Google Scholar · h–index · impact factor · journal · LaTeX · LIPIcs · LNCS · open access · plagiarism · presentation · program committee · rebuttal · review · submission · TikZ · workshop · ...

Types of Scientific Works

- seminar report
- bachelor thesis
- master thesis
- PhD thesis
- habilitation thesis
- workshop paper
- conference paper
- journal article
- book chapter
- book

Outline

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- (-2,1) -- (-1,3) -- (1,3) -- (2,1) -- (3,1);
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

```
\draw (0,0) circle [radius=2];
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

```
\draw (0,0) circle [radius=2];
\draw (-0.5,0.5) ellipse [x radius=0.2, y radius=0.4];
\draw (0.5,0.5) ellipse [x radius=0.2, y radius=0.4];
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

```
\draw (0,0) circle [radius=2];
\draw (-0.5,0.5) ellipse [x radius=0.2, y radius=0.4];
\draw (0.5,0.5) ellipse [x radius=0.2, y radius=0.4];
\draw (-1,-1) arc [start angle=185, end angle=355, x radius=1, y radius = 0.5];
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

```
\draw (0,0) circle [radius=2];
\draw (-0.5,0.5) ellipse [x radius=0.2, y radius=0.4];
\draw (0.5,0.5) ellipse [x radius=0.2, y radius=0.4];
\draw (-1,-1) arc [start angle=185, end angle=355, x radius=1, y radius = 0.5];
\draw (-3,-3) rectangle (3,3);
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

```
\draw (0,0) circle (2);
\draw (-0.5,0.5) ellipse [x radius=0.2, y radius=0.4];
\draw (0.5,0.5) ellipse [x radius=0.2, y radius=0.4];
\draw (-1,-1) arc [start angle=185, end angle=355, x radius=1, y radius = 0.5];
\draw (-3,-3) rectangle (3,3);
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

```
\draw (0,0) circle (2);
\draw (-0.5,0.5) ellipse (0.2 and 0.4);
\draw (0.5,0.5) ellipse (0.2 and 0.4);
\draw (-1,-1) arc [start angle=185, end angle=355, x radius=1, y radius = 0.5];
\draw (-3,-3) rectangle (3,3);
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

```
\draw (0,0) circle (2);
\draw (-0.5,0.5) ellipse (0.2 and 0.4);
\draw (0.5,0.5) ellipse (0.2 and 0.4);
\draw (-1,-1) arc (185:355:1 and 0.5);
\draw (-3,-3) rectangle (3,3);
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

src

```
\draw (0,0) circle (2);
\draw (-0.5,0.5) ellipse (0.2 and 0.4);
\draw (0.5,0.5) ellipse (0.2 and 0.4);
\draw (-1,-1) arc (185:355:1 and 0.5);
\draw (-3,-3) rectangle (3,3);
```

Relative Coordinates

```
\draw[thin,dotted] (-4,-4) grid (4,4);
\draw[thick,red]
  (-3,1) -- ++(1,0) -- ++(1,2) -- ++(2,0) -- ++(1,-2) -- ++(1,0);
```

Shapes

src

```
\draw[shading=ball, ball color=yellow] (0,0) circle (2);
\draw[shading=ball, ball color=black] (-.5,.5) ellipse (.2 and .4);
\draw[shading=ball, ball color=black] (.5,.5) ellipse (.2 and .4);
\draw[very thick] (-1,-1) arc (185:355:1 and .5);
```

Nodes and Shapes

```
\usetikzlibrary{shapes}
\draw (0,1) node [draw] {rectangle};
```

Nodes and Shapes

```
\usetikzlibrary{shapes}
\node (r) at (0,1)   [draw, rectangle] {rectangle};
```

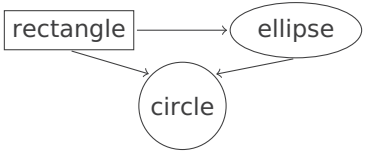
Nodes and Shapes

```
\usetikzlibrary{shapes}

\node (r) at (0,1)   [draw, rectangle] {rectangle};
\node (c) at (1.5,0) [draw, circle]    {circle};
\node (e) at (3,1)   [draw, ellipse]   {ellipse};
```

Nodes and Shapes

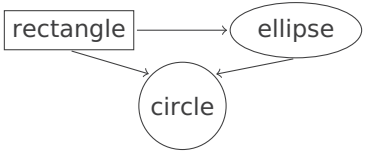
```
\usetikzlibrary{shapes}
\node (r) at (0,1)   [draw, rectangle] {rectangle};
\node (c) at (1.5,0) [draw, circle]    {circle};
\node (e) at (3,1)   [draw, ellipse]   {ellipse};
\draw[->] (r.east)  -- (e.west);
\draw[->] (r.south) -- (c.north west);
\draw[->] (e.south) -- (c.north east);
```



Nodes and Shapes

```
\usetikzlibrary{shapes}
\node (r) at (0,1)   [draw, rectangle] {rectangle};
\node (c) at (1.5,0) [draw, circle]    {circle};
\node (e) at (3,1)   [draw, ellipse]   {ellipse};
\draw[->] (r.east)  -- (e.west);
\draw[->] (r.south) -- (c.north west);
\draw[->] (e.south) -- (c.north east);
```

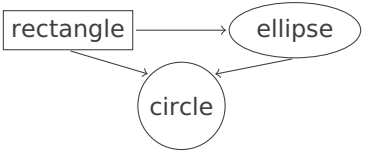
src



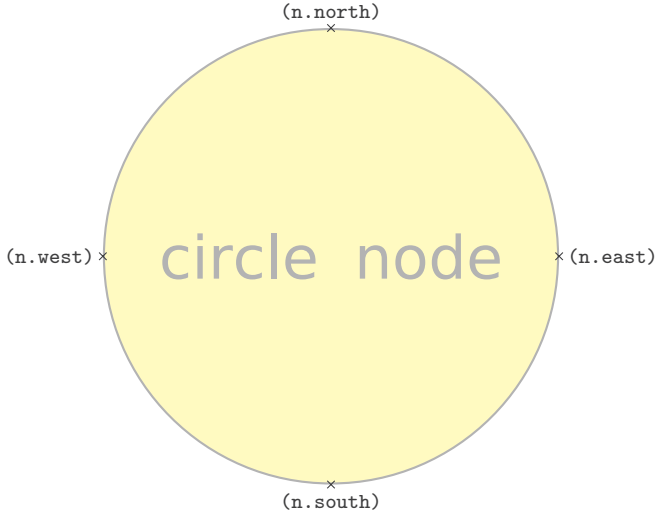
Nodes and Shapes

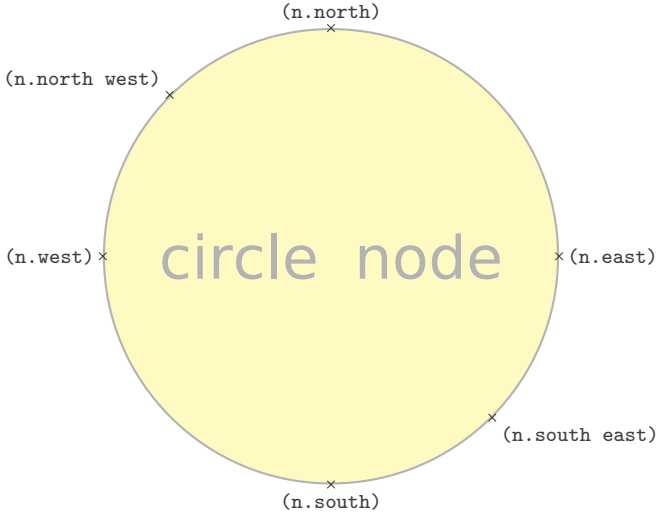
```
\usetikzlibrary{shapes}
\node (r) at (0,1)   [draw, rectangle] {rectangle};
\node (c) at (1.5,0) [draw, circle]    {circle};
\node (e) at (3,1)   [draw, ellipse]   {ellipse};
\draw[->] (r.east)  -- (e.west);
\draw[->] (r.south) -- (c.north west);
\draw[->] (e.south) -- (c.north east);
```

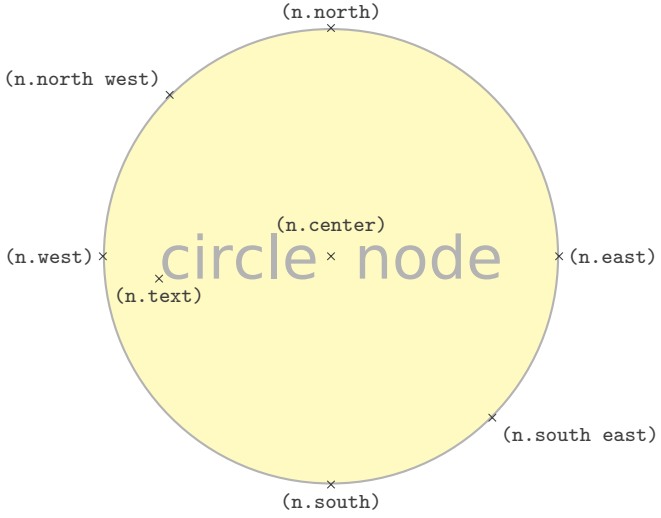
src

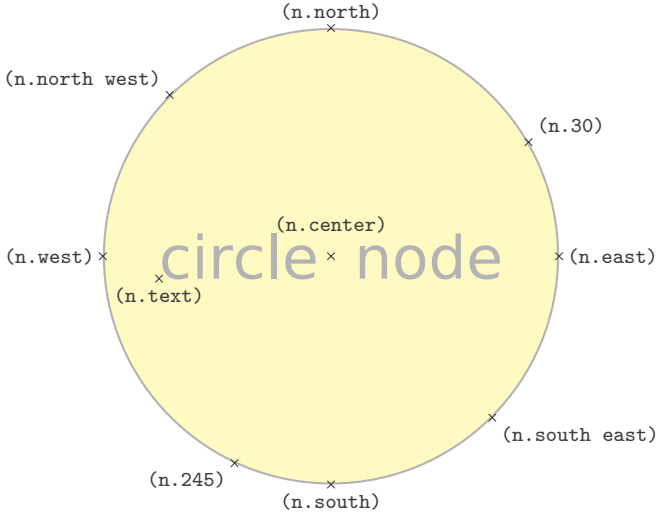


- predefined shapes have numerous anchor points


(n.north)
(n.west)
circle node
(n.east)
(n.south)


(n.north)
(n.north west)
(n.west)
circle node
(n.east)
(n.south east)
(n.south)


(n.north)
(n.north west)
(n.center)
circle node
(n.west)
(n.east)
(n.text)
(n.south east)
(n.south)

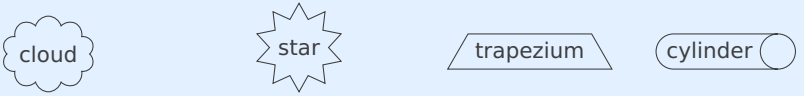

(n.north)
(n.north west)
(n.30)
(n.center)
circle node
(n.west)
(n.east)
(n.text)
(n.south east)
(n.245)
(n.south)

Various Node Shapes

Various Node Shapes

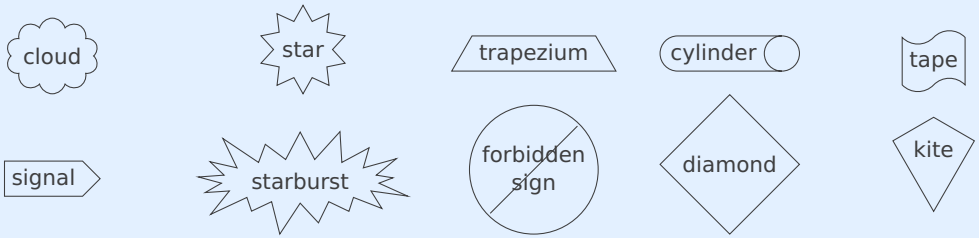
Various Node Shapes

Various Node Shapes

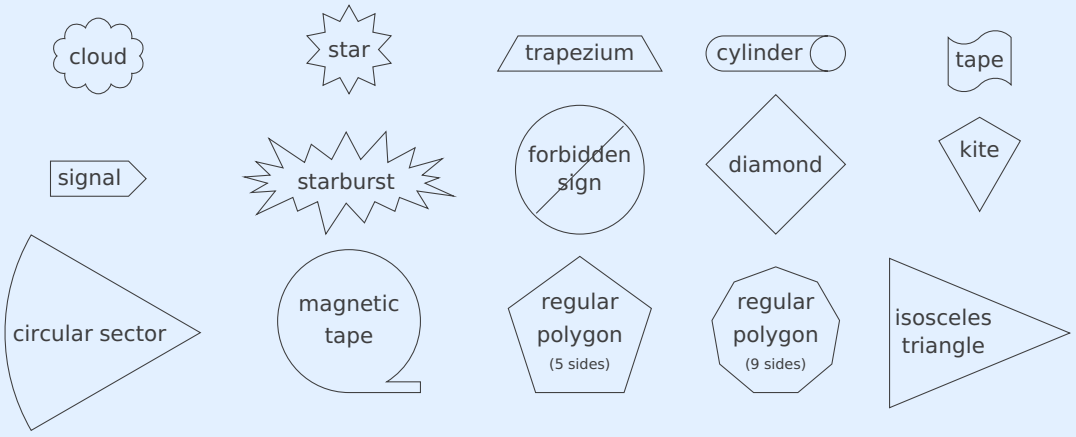


Various Node Shapes

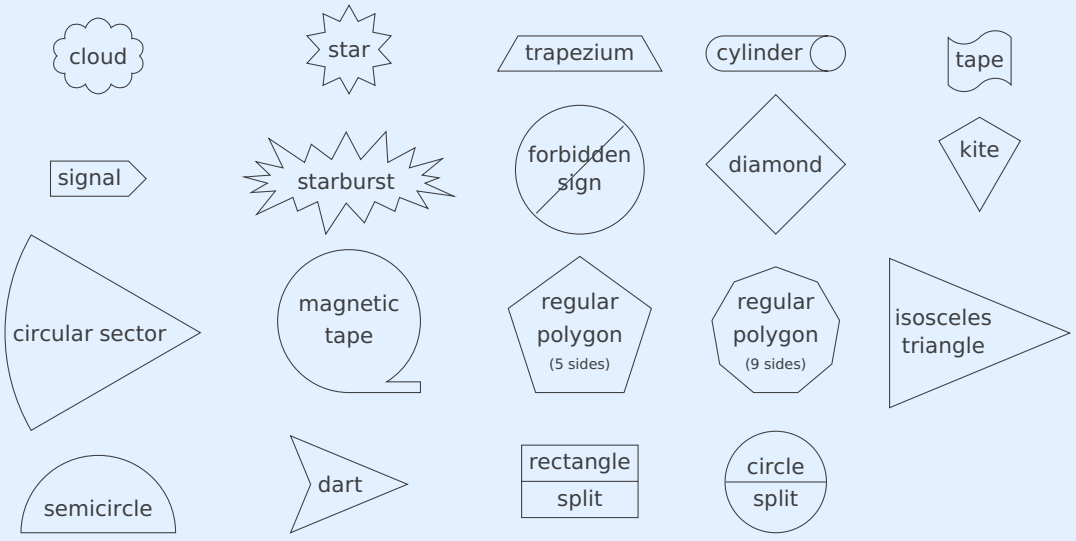
Various Node Shapes



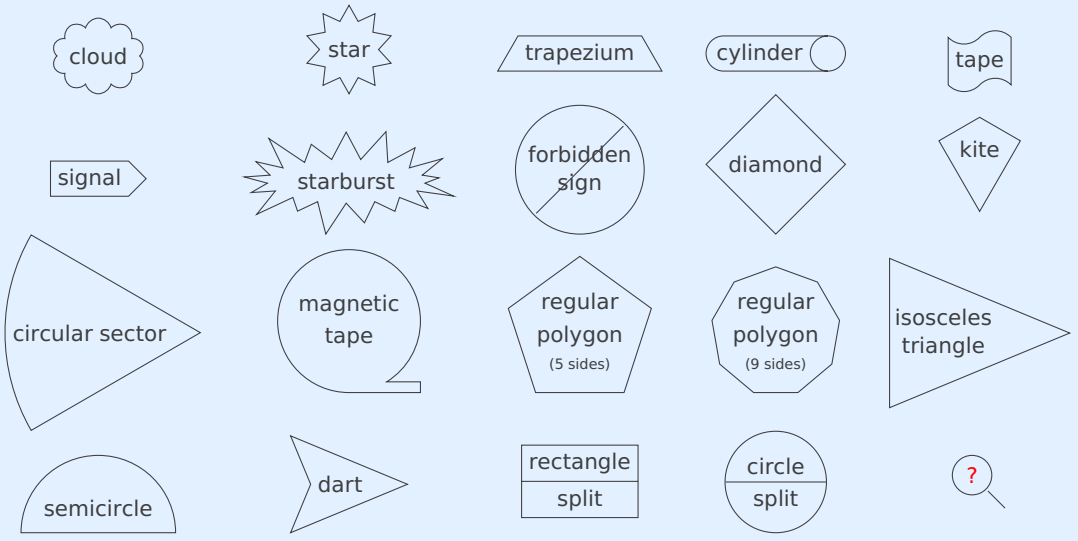
Various Node Shapes



Various Node Shapes



Various Node Shapes



Lines and Nodes

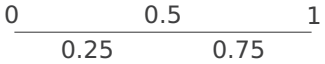
```
\usetikzlibrary{positioning}
\draw (0,0) --
  node [above, pos=0]    {0}
  node [above, pos=0.5]  {0.5}
  node [above, pos=1]    {1}
  node [below, pos=0.25] {0.25}
  node [below, pos=0.75] {0.75}
(4,0);
```

src

Lines and Nodes

```
\usetikzlibrary{positioning}
\draw (0,0) --
  node [above, pos=0]    {0}
  node [above, pos=0.5]  {0.5}
  node [above, pos=1]    {1}
  node [below, pos=0.25] {0.25}
  node [below, pos=0.75] {0.75}
(4,0);
```

src



Alignment

```
\begin{tikzpicture}[every node/.style = {inner sep=0pt}]
\node (E) {E};
\node (p) [right = 0pt of E] {p};
\node (i) [right = 0pt of p] {i};
\node (c) [right = 0pt of i] {c};
\node (.) [right = 0pt of c] {.};
\end{tikzpicture}
```

Alignment

```
\begin{tikzpicture}[every node/.style = {inner sep=0pt}]
\node (E) {E};
\node (p) [right = 0pt of E] {p};
\node (i) [right = 0pt of p] {i};
\node (c) [right = 0pt of i] {c};
\node (.) [right = 0pt of c] {.};
\end{tikzpicture}
```

Epic.

Alignment

```
\begin{tikzpicture}[every node/.style = {inner sep=0pt}]
\node (E) {E};
\node (p) [base right = 0pt of E] {p};
\node (i) [base right = 0pt of p] {i};
\node (c) [base right = 0pt of i] {c};
\node (.) [base right = 0pt of c] {.};
\end{tikzpicture}
```

Epic.

Outline

- location
- call for papers
- deadlines
- program committee
- invited speakers
- accepted papers
- rebuttal
- publication
- ranking
- awards

- location (Kaiserslautern or Honolulu)
- call for papers
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Locations

Chapel Hill

Locations

Chapel Hill Asilomar Montreal Como Pont-à-Mousson Kaiserlautern Nancy Madrid Århus Susono New Brunswick Utrecht Aizu Paris Lille Townsville Auckland Trento Pittsburgh Fischbachau Tokyo Siena Copenhagen Kyoto Valencia Miami Nara Linz Seattle Harrachov Lisbon Bremen Tarragona Hagenberg Sydney Doha Brasilia Špindlerův Mlýn Dakar Edinburgh Yogyakarta Novi Sad Wrocław Mérida Stellenbosch Eindhoven Kanazawa Vienna Warsaw Porto Gothenburg Oxford Hanoi Prague Natal Haifa Rome Białystok Tallinn Stuttgart

Locations

Chapel Hill Asilomar Montreal Como Pont-à-Mousson Kaiserlautern Nancy Madrid Århus Susono New Brunswick Utrecht Aizu Paris Lille Townsville Auckland Trento Pittsburgh Fischbachau Tokyo Siena Copenhagen Kyoto Valencia Miami Nara Linz Seattle Harrachov Lisbon Bremen Tarragona Hagenberg Sydney Doha Brasilia Špindlerův Mlýn Dakar Edinburgh Yogyakarta Novi Sad Wrocław Mérida Stellenbosch Eindhoven Kanazawa Vienna Warsaw Porto Gothenburg Oxford Hanoi Prague Natal Haifa Rome Białystok Tallinn Stuttgart

```
\`a    \r{A}    \v{S}    \r{u}    \'y    \'e    \l
```

Locations

Chapel Hill Asilomar Montreal Como Pont-à-Mousson Kaiserlautern Nancy Madrid
Århus 裾野 New Brunswick Utrecht 会津 Paris Lille Townsville Auckland Trento
Pittsburgh Fischbachau 東京 Siena Copenhagen 京都 Valencia Miami
奈良 Linz Seattle Harrachov Lisbon Bremen Tarragona Hagenberg Sydney
Doha Brasilia Špindlerův Mlýn Dakar Edinburgh Yogyakarta Novi Sad Wrocław
Mérida Stellenbosch Eindhoven 金沢 Vienna Warsaw Porto Gothenburg
Oxford Hanoi Prague Natal Haifa Rome Białystok Tallinn Stuttgart

```
\`a    \r{A}    \v{S}    \r{u}    \'y    \'e    \l
```


TRAVEL THOUSANDS OF MILES...
really? i use computers too! i sell things on eBay.
SHARE A HOTEL ROOM WITH OTHER GRAD STUDENTS...
PREPARE A 15-MINUTE TALK ON 4 YEARS OF YOUR LIFE'S WORK...
SESSION 10-A.G4, SALON A-7B...
SO YOU CAN SHARE YOUR IDEAS WITH THE ENTIRE SCIENTIFIC COMMUNITY.
thank you... ALL... for coming
zzz
JORGE CHAM ©STANFORD DAILY
phd.stanford.edu

- location (Kaiserslautern or Honolulu)
- call for papers
- deadlines
- program committee
- invited speakers
- accepted papers
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- publication
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Federated Logic Conference (FLoC) 2026

Federated Logic Conference (FLoC) 2026

- 32nd International Conference on Principles and Practice of Constraint Programming
- 11th International Conference on Formal Structures for Computation and Deduction
- 42nd International Conference on Logic Programming
- 23rd International Conference on Principles of Knowledge Representation and Reasoning
- 41st Annual Symposium on Logic in Computer Science
- 29th International Conference on Theory and Applications of Satisfiability Testing
- 38th International Conference on Computer Aided Verification
- 39th IEEE Computer Security Foundations Symposium
- 13th International Joint Conference on Automated Reasoning
- 17th International Conference on Interactive Theorem Proving

Federated Logic Conference (FLoC) 2026

- 32nd International Conference on Principles and Practice of Constraint Programming — CP
- 11th International Conference on Formal Structures for Computation and Deduction — FSCD
- 42nd International Conference on Logic Programming — ICLP
- 23rd International Conference on Principles of Knowledge Representation and Reasoning — KR
- 41st Annual Symposium on Logic in Computer Science — LICS
- 29th International Conference on Theory and Applications of Satisfiability Testing — SAT
- 38th International Conference on Computer Aided Verification — CAV
- 39th IEEE Computer Security Foundations Symposium — CSF
- 13th International Joint Conference on Automated Reasoning — IJCAR
- 17th International Conference on Interactive Theorem Proving — ITP

Federated Logic Conference (FLoC) 2026

32nd International Conference on Principles and Practice of Constraint Programming	CP
11th International Conference on Formal Structures for Computation and Deduction	FSCD
42nd International Conference on Logic Programming	ICLP
23rd International Conference on Principles of Knowledge Representation and Reasoning	KR
41st Annual Symposium on Logic in Computer Science	LICS
29th International Conference on Theory and Applications of Satisfiability Testing	SAT
38th International Conference on Computer Aided Verification	CAV
39th IEEE Computer Security Foundations Symposium	CSF
13th International Joint Conference on Automated Reasoning	IJCAR
17th International Conference on Interactive Theorem Proving	ITP

Outline

Exemplary Bachelor Theses

▸ Number Link	Benjamin Rupprechter	2009
▸ Kurodoko	Johannes Koch	2020
▸ Five Cells	Diana Gründlinger	2023

Common Ingredients

- appendices
- bibliography
- chapters / sections
- figures
- footnotes
- formulas
- hyper links
- lists
- plots
- program code
- screen shots
- table of contents
- tables

Exemplary Bachelor Theses

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Common Ingredients

- appendices
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```
\begin{tabular}{l|r|r|r|r|c}
tool & YES & NO & MAYBE & TIMEOUT & place \\ \hline
ACP & 48 & 26 & 12 & 14 & 3 \\
AProVE & 21 & 21 & 58 & 0 & 6 \\
CONFident & 21 & 22 & 36 & 21 & 5 \\
CSI & 51 & 33 & 3 & 13 & 1 \\
FORT-h & 8 & 9 & 83 & 0 & 7 \\
Grackle-CSI & 48 & 34 & 5 & 13 & 2 \\
Hakusan & 27 & 34 & 22 & 17 & 4
\end{tabular}
```

```
\begin{tabular}{l|r|r|r|r|c}
tool & YES & NO & MAYBE & TIMEOUT & place \\ \hline
ACP & 48 & 26 & 12 & 14 & 3 \\
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\end{tabular}
```

- columns are specified by `l` `r` `c`

```
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```

- columns are specified by `l` `r` `c`
- `|` creates vertical line

```
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tool & YES & NO & MAYBE & TIMEOUT & place \\ \hline
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```

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- `|` creates vertical line
- columns are separated by `&`
- rows are separated by `\\`

```
\begin{tabular}{l|r|r|r|r|c}
tool & YES & NO & MAYBE & TIMEOUT & place \\ \hline
ACP & 48 & 26 & 12 & 14 & 3 \\
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Grackle-CSI & 48 & 34 & 5 & 13 & 2 \\
Hakusan & 27 & 34 & 22 & 17 & 4
\end{tabular}
```

src

- columns are specified by `l r c`
- `|` creates vertical line
- columns are separated by `&`
- rows are separated by `\\`
- `\hline` creates horizontal line

- `\renewcommand{\arraystretch}{`*value*`}` to change vertical spacing

- `\renewcommand{\arraystretch}{`*value*`}` to change vertical spacing
- `p{`*width*`}` for columns of fixed width *width*

- `\renewcommand{\arraystretch}{`*value*`}` to change vertical spacing
- `p{`*width*`}` for columns of fixed width *width*
- `@{`*code*`}` to replace space between columns

- `\renewcommand{\arraystretch}{`*value*`}` to change vertical spacing
- `p{`*width*`}` for columns of fixed width *width*
- `@{`*code*`}` to replace space between columns
- `\multicolumn{`*value*`}{`*c*`}{`*text*`}` to span multiple columns

- `\renewcommand{\arraystretch}{`*value*`}` to change vertical spacing
- `p{`*width*`}` for columns of fixed width *width*
- `@{`*code*`}` to replace space between columns
- `\multicolumn{`*value*`}{`*c*`}{`*text*`}` to span multiple columns
- `\cline{`*a*`-`*b*`}` for horizontal lines from column *a* to column *b*

- `\renewcommand{\arraystretch}{`*value*`}` to change vertical spacing
- `p{`*width*`}` for columns of fixed width *width*
- `@{`*code*`}` to replace space between columns
- `\multicolumn{`*value*`}{`*c*`}{`*text*`}` to span multiple columns
- `\cline{`*a*`-`*b*`}` for horizontal lines from column *a* to column *b*

```
\renewcommand{\arraystretch}{1.5}
\begin{tabular}{@{}ccl@{}}
\hline
\multicolumn{2}{c}{input} & output \\
command & declaration \\ \cline{1-2}
\verb+\textrm+ & \verb+\rmfamily+ & \rmfamily example text \\
\verb+\textsf+ & \verb+\sffamily+ & \sffamily example text \\
\verb+\texttt+ & \verb+\ttfamily+ & \ttfamily example text \\ \hline
\end{tabular}
```

src

input		output
command	declaration	
`\textrm`	`\rmfamily`	example text
`\textsf`	`\sffamily`	example text
`\texttt`	`\ttfamily`	`example text`

input		output
command	declaration	
\textrm	\rmfamily	example text
\textsf	\sffamily	example text
\texttt	\ttfamily	example text

- useful extensions: longtable tabularx booktabs

input		output
command	declaration	
`\textrm`	`\rmfamily`	example text
`\textsf`	`\sffamily`	example text
`\texttt`	`\ttfamily`	`example text`

- useful extensions: longtable tabularx booktabs
- style advice: avoid vertical lines and double horizontal lines

Outline

Homework Exercises for March 26

1. Select three topics.