

The `listhesis` class*

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1 Introduction

Use the `listhesis` class to typeset your thesis.

2 Dependencies

As of `listhesis` v1.0, the class depends on the KOMA script classes and the packages

- `inputenc`
- `babel`
- `xkeyval`
- `tikz`
- `xcolor`
- `graphicx`
- `hyperref`

3 Usage

Best use the provided `thesis.tex` skeleton file to start writing your thesis. Consider using `latexmk` with option `-pdf` to compile your document.

3.1 Macros Provided

`\setup` `\setup{\langle key=value \rangle}` Main class interface.

*This document corresponds to `listhesis` v1.0, dated 2017/07/21.

4 Implementation

We derive everything from the KOMA script. We pass all options to the KOMA script class and execute some default options. The default classes are `scrartcl`, `scrreprt`, and `scrbook`.

```
1 \DeclareOption{dvipsnames}{\PassOptionsToPackage{\CurrentOption}{xcolor}}%
2 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{scrreprt}}%
3 \ProcessOptions\relax
4 \LoadClass[a4paper,12pt,twoside,
5 bibliography=totoc,
6 listof=totoc,
7 listof=entryprefix,
8 toc=sectionentrywithdots,
9 abstract=true]{scrreprt}%
10 \RequirePackage[utf8]{inputenc}%
11 \RequirePackage[ngerman,english]{babel}%
12 \RequirePackage[left=2.5cm,right=3.5cm,top=2.5cm,bottom=2.5cm,includeheadfoot]{geometry}%
13 \RequirePackage{xkeyval}%
14 \RequirePackage{tikz}%
15 \RequirePackage{xcolor}%
16 \RequirePackage{graphicx}%
17 \RequirePackage[hidelinks,bookmarksnumbered]{hyperref}%
18 \definecolor{tumbleblue}{cmyk}{1,0.43,0,0}%
19 \pagestyle{headings}%
20 \setkomafont{pageheadfoot}{\sffamily\normalcolor\small}
```

4.1 Interface

4.1.1 Language

Add supported languages. For a reference on customizing KOMA script in this respect, see Chapter "12.4. Definition sprachabhngiger Bezeichner" in the KOMA script doughtmentation (srguide).

Switch between languages Process the currently active language option at the beginning of the document by setting the babel language.

```
21 \AtBeginDocument{%
22   \iflis@thesis@en
23     \selectlanguage{english}%
24   \else
25     \selectlanguage{ngerman}%
26   \fi
27 \hypersetup{%
28   bookmarks      = true,           % show bookmarks bar?
29   pdftoolbar     = true,           % show Acrobats toolbar?
30   pdfmenubar     = true,           % show Acrobats menu?
31   pdfwindow      = false,          % window fit to page when opened
32   pdfstartview   = {FitH},         % fits the width of the page to the window
```

```

33     pdftitle      = {\@title},      % title
34     pdfauthor     = {\@author},     % author
35     pdfsubject    = {\lis@thesis@type@val}, % subject of the document
36     pdfcreator    = {\@author},     % creator of the document
37     pdfnewwindow  = true,           % links in new window
38   }
39 }%

    Define boolean language keys.
40 \define@boolkey[lis]{thesis}{en}[true]{}%
41 \define@boolkey[lis]{thesis}{de}[true]{%
42   \iflis@thesis@de
43     \lis@thesis@enfalse%
44   \else
45     \lis@thesis@entrue%
46   \fi}%

    Define long language options.
47 \define@choicekey*[lis]{thesis}{language}[\val\nr]{english,german}[english]{%
48   \ifcase\nr\relax
49     \lis@thesis@entrue%
50   \or
51     \lis@thesis@enfalse%
52   \fi}%

    Set default language.
53 \setkeys[lis]{thesis}{en}%

```

4.1.2 Thesis Type

Thesis type definitions Add thesis types to your liking by defining a thesis type macro here. The name after the `@type@` should be the option of the user interface.

```

54 \def\lis@thesis@type@master{\iflis@thesis@en Master~thesis\else Masterarbeit\fi}%
55 \def\lis@thesis@type@bachelor{\iflis@thesis@en Bachelor~thesis\else Bachelorarbeit\fi}%
56 \def\lis@thesis@type@research{\iflis@thesis@en Research~practice\else Forschungspraxis\fi}%
57 \def\lis@thesis@type@internship{\iflis@thesis@en Internship\else Praktikum\fi}%
58 \def\lis@thesis@type@diplom{\iflis@thesis@en Diplom~thesis \else Diplomarbeit\fi}%

```

Conditionally set the value of the thesis type (this is used for the titlepage) using an ordinary key. NOTE: choicekeys seem not to work well (at least not in the preamble), so we use an ordinary key here. Relaying `\setup` after the preamble is also not a good idea, as some document properties are set already.

```

59 \define@key[lis]{thesis}{type}[master]{%
60   \def\lis@thesis@type@val{\csname lis@thesis@type@#1\endcsname}%
61 }%

```

Set default type.

```

62 \setkeys[lis]{thesis}{type}%

```

4.1.3 Thesis Options

\setup Main thesis setup macro.

```
63 \newcommand{\setup}[2] [] {\ClassWarningNoLine{listthesis}{Entering setup}\setkeys[lis]{thesis}}
```

4.1.4 Supervisors

Setup the keys to store cover page supervisor information.

```
64 \define@cmdkey[lis]{thesis}{supervisor}{}%
65 \define@cmdkey[lis]{thesis}{advisor}{}%
66 \define@boolkey[lis]{thesis}{isexternal}{}%
67 \define@cmdkey[lis]{thesis}{company}{\lis@thesis@isexternaltrue}%
68 \define@cmdkey[lis]{thesis}{externalAdvisor}{\lis@thesis@isexternaltrue}%
```

Set defaults to display in the skeleton file here.

```
69 \def\cmdlis@thesis@supervisor{Supervising Professor}%
70 \def\cmdlis@thesis@advisor{Advising PhD. Student}%
71 \def\cmdlis@thesis@externalAdvisor{Your Company Advisor}%
72 \def\cmdlis@thesis@company{Company the thesis was done}%
```

Set supervisor tokens.

```
73 \def\lis@thesis@authorText{\iflis@thesis@en\relax Author\else Autor\fi}%
74 \def\lis@thesis@supervisorText{\iflis@thesis@en Supervisor\else Pr\"ufer\fi}%
75 \def\lis@thesis@advisorText{\iflis@thesis@en Advisor\else Betreuer\fi}%
76 \def\lis@thesis@companyText{\iflis@thesis@en Carried~out~at\else Durchgef\"uhr~t~bei\fi}%
77 \def\lis@thesis@externalAdvisorText{\iflis@thesis@en External~advisor\else Externer~Betreuer\fi}%
78 \def\lis@thesis@submissionDateText{\iflis@thesis@en Submission~date\else Datum~der~Abgabe\fi}%
```

4.1.5 Titlepage

Additional setup.

```
79 \define@cmdkey[lis]{thesis}{author}{\author{\cmdlis@thesis@author}}%
80 \define@cmdkey[lis]{thesis}{title}{\title{\cmdlis@thesis@title}}%
81 \define@cmdkey[lis]{thesis}{city}{\lis@thesis@default@city}{}%
82 \define@cmdkey[lis]{thesis}{date}{\@date}{}%
83 \setkeys[lis]{thesis}{city,date}%
```

Set defaults here.

```
84 \def\lis@thesis@default@city{\iflis@thesis@en Munich\else M\"unchen\fi}%
85 \def\lis@thesis@chair{\iflis@thesis@en
86   Chair~for~Integrated~Systems%
87   \else
88   Lehrstuhl~f\"ur~Integrierte~Systeme%
89   \fi}%
90 \def\lis@thesis@department{\iflis@thesis@en
91   Department~of~Electrical~and~Computer~Engineering%
92   \else
93   Fakult\"at~fr~Elektrotechnik~und~Informationstechnik%
94   \fi}%
95 \def\lis@thesis@tum{\iflis@thesis@en
```

```

96     Technical~University~of~Munich%
97 \else
98     Technische~Universit~at~M~unchen%
99 \fi}%

\maketitle Typeset the titlepage.
        Renew maketitle. Start using an empty page.
100 \renewcommand{\maketitle}[2]{%
101 \begin{titlepage}
102 \thispagestyle{empty}
103 \def\lis@thesis@title@leftMargin{25mm}%
104 \def\lis@thesis@title@rightMargin{25mm}%
105 \def\lis@thesis@title@topMargin{25mm}%

        For the title, use Helvetica as sans-serif font.
106 \renewcommand{\sfdefault}{phv}%
107 \sffamily

        We use TikZ/PGF to accomplish absolute text positioning. As for drawings
        and plots we will include PGF nevertheless, it reduces the number of packets
        loaded (so no textpos package here).
        Dimensions we use here are:
        A4: 210 x 297 mm
        Logo: 740 x 390 px = 1.89743589x x 1x
108 \begin{tikzpicture}[remember picture, overlay]

        Draw help lines. Use only for development.
109 % \draw[thick] (current page.north west) ++(0,-10mm) -- ++(210mm,0);
110 % \draw[thick] (current page.north west) ++(0,-20mm) -- ++(210mm,0);
111 % \draw[thick] (current page.north east) ++(-10mm, 0) -- ++(0,-297mm);
112 % \draw[thick] (current page.north west) ++(+10mm, 0) -- ++(0,-297mm);

        Set the logo.
113 \path (current page.north east) ++(-\lis@thesis@title@rightMargin -0.5*740/390*10mm, -\lis
114 node {\includegraphics[height=10mm]{TUM_Logo_blau_rgb_p.png}};

        Header text.
115 \path (current page.north west) ++(\lis@thesis@title@leftMargin, -\lis@thesis@title@topMar
116 node[below right,yshift=0.5mm, xshift=-1.5mm,color=tumblue] {%
117 \parbox{100mm}{%
118 \scriptsize
119 \lis@thesis@chair\\
120 \lis@thesis@department\\
121 \lis@thesis@tum}};

        Thesis title and type. We use a golden section to set the height: 297 = 113 :
184
122 \path (current page.north) ++(0,-113mm)
123 node {%
124 \parbox{160mm}{%
125 {\Large\bfseries\@title}\\[5ex]
126 {\bfseries\lis@thesis@type@val}}};

```

Advisors. We use a golden section to set the height again: $184 = \sqrt{70 : 114}$
The first column is:

```

127 \path (current page.north west) ++(\lis@thesis@title@leftMargin,-113mm-70mm)
128   node[right] {%
129     \parbox{160mm}{%
130       \lis@thesis@authorText\\[2ex]
131       \iflis@thesis@isexternal
132         \lis@thesis@companyText\\
133         \lis@thesis@externalAdvisorText\\
134       \fi
135       \lis@thesis@advisorText\\
136       \lis@thesis@supervisorText\\[2ex]
137       \lis@thesis@submissionDateText
138     }
139   };

```

The second column is (if we wanted to use golden section: $210 = \sqrt{80 : 130}$):

```

140 \path (current page.north west) ++(\lis@thesis@title@leftMargin +40mm,-113mm-70mm)
141   node[right] {%
142     \parbox{150mm}{%
143       \@author\\[2ex]
144       \iflis@thesis@isexternal
145         \cmdlis@thesis@company\\
146         \cmdlis@thesis@externalAdvisor\\
147       \fi
148       \cmdlis@thesis@advisor\\
149       \cmdlis@thesis@supervisor\\[2ex]
150       \cmdlis@thesis@date
151     }
152   };
153 \end{tikzpicture}

```

Return to standard sans-serif font.

```

153 \renewcommand{\sfdefault}{pcr}%
154 \end{titlepage}}%

```

4.1.6 Confirmation

This is the confirmation that has to be signed by the student. Input it at the end of the thesis.

`\confirmation`

```

155 \newcommand{\confirmation}{%
156 \cleardoublepage
157 \thispagestyle{empty}
158 {\normalcolor
159 {\noindent\bfseries\sffamily\large\iflis@thesis@en Confirmation\else Erk1\arung\fi}\\[5ex]
160 \iflis@thesis@en
161   Herewith I, \@author, confirm that I independently prepared this work. No further referen
162   or auxiliary means except those declared in this document have been used.%
163 \else

```

```

164 Hiermit erkl\"are ich, \@author, dass ich die vorliegende Arbeit
165 selbstst\"andig und ohne Benutzung anderer als der angegebenen
166 Hilfsmittel angefertigt habe. Alle aus fremden (einschlie\sslich
167 elektronischer) Quellen direkt oder indirekt \"ubernommenen Gedanken
168 habe ich in dieser Ausarbeitung als solche kenntlich gemacht.%
169 \fi\\[5ex]
170 \cmdlis@thesis@city, \cmdlis@thesis@date\\[5ex]
171 \parbox{100mm}{\dotfill}\\
172 \@author}}

```

4.1.7 Abstract

Abstract interface. For German thesis, also provide an english abstract here.

`\abstract`

```

173 \renewcommand{\abstract}[2][]{%
174   \iflis@thesis@en
175     \def\lis@thesis@abstract@en{#2}%
176     \def\lis@thesis@abstract@de{#1}%
177   \else
178     \def\lis@thesis@abstract@en{#1}%
179     \def\lis@thesis@abstract@de{#2}%
180   \fi}%

```

`\makeabstract`

```

181 \newcommand{\makeabstract}{%
182   \newpage\cleardoublepage
183   \addchap*{Abstract}%
184   \iflis@thesis@en
185     \lis@thesis@abstract@en%
186   \else
187     \lis@thesis@abstract@de%
188     \vskip 12ex%
189     \ifx\lis@thesis@abstract@en\empty
190       \ClassError{listthesis}{German thesis needs an English
191         abstract. Use optional argument of abstract command}{}
192     \else \noindent\lis@thesis@abstract@en\fi
193   \fi}%

```