The lstbayes package

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1 Introduction

This package provides language drivers for the listings package for the several Bayesian modeling languages: BUGS, JAGS, and Stan.

2 Usage

See the documentation of the listings package.

3 Implementation

```
1 \RequirePackage{listings}
```

3.1 BUGS

Language driver for BUGS, including WinBUGS and OpenBUGS. The driver is based on OpenBUGS v. 3.2.3.

```
2 \lstdefinelanguage{BUGS}{
3   morekeywords=[1]{for,in,model,T,I,C},%
4   morecomment=[l]{\#},%
5   sensitive=true,%
6   alsoletter={.},%
7   otherkeywords={<-,~},%
8   literate={<-}{{$\leftarrow$}}1 {~}{{$\sim$}}1%
9 }
10 \lstalias[]{OpenBUGS}[]{BUGS}
11 \lstalias[]{WinBUGS}[]{BUGS}
```

3.2 JAGS

Language driver for JAGS. The driver is based on JAGS version 3.4.0 (Sept 4, 2013).

```
12 \lstdefinelanguage[]{JAGS}[]{BUGS}{
```

```
13    morekeywords=[1]{data,var,const},%
14    morecomment=[n]{/*}{*/}%
15 }
```

3.3 Stan

Language driver for Stan. The driver is based on Stan modeling language version
2.9.0.

```
16 \lstdefinelanguage{Stan}{
17    morekeywords=[1]{functions,data,parameters,transformed,model,generated,quantities,%
18      for,in,while,print,if,else,lp__,lower,upper,increment_log_prob,T,return,%
19      reject,integrate_ode},%
20    morekeywords=[2]{int,real,vector,%
21      ordered,positive_ordered,simplex,unit_vector,%
22      row_vector,matrix,%
23      cholesky_factor_corr,cholesky_factor_cov,%
24      coor_matrix,cov_matrix,%
25      void},%
26    morekeywords=[3]{%
27      Phi,%
28      Phi_approx,%
29      abs,%
30      acos,%
31      acosh,%
32      append_col,%
33      append_row,%
34      asin,%
35      asinh,%
36      atan,%
37      atan2,%
38      atanh,%
39      bernoulli,%
40      bernoulli_ccdf_log,%
41      bernoulli_cdf,%
42      bernoulli_cdf_log,%
43      bernoulli_log,%
44      bernoulli_logit,%
45      bernoulli_logit_log,%
46      bernoulli_rng,%
47      bessel_first_kind,%
48      bessel_second_kind,%
49      beta,%
50      beta_binomial,%
51      beta_binomial_ccdf_log,%
52      beta_binomial_cdf,%
53      beta_binomial_cdf_log,%
54      beta_binomial_log,%
55      beta_binomial_rng,%
56      beta_ccdf_log,%
```

```
57    beta_cdf,%
58    beta_cdf_log,%
59    beta_log,%
60    beta_rng,%
61    binary_log_loss,%
62    binomial,%
63    binomial_ccdf_log,%
64    binomial_cdf,%
65    binomial_cdf_log,%
66    binomial_coefficient_log,%
67    binomial_log,%
68    binomial_logit,%
69    binomial_logit_log,%
70    binomial_rng,%
71    block,%
72    categorical,%
73    categorical_log,%
74    categorical_logit,%
75    categorical_logit_log,%
76    categorical_rng,%
77    cauchy,%
78    cauchy_ccdf_log,%
79    cauchy_cdf,%
80    cauchy_cdf_log,%
81    cauchy_log,%
82    cauchy_rng,%
83    cbrt,%
84    ceil,%
85    chi_square,%
86    chi_square_ccdf_log,%
87    chi_square_cdf,%
88    chi_square_cdf_log,%
89    chi_square_log,%
90    chi_square_rng,%
91    cholesky_decompose,%
92    col,%
93    cols,%
94    columns_dot_product,%
95    columns_dot_self,%
96    cos,%
97    cosh,%
98    crossprod,%
99    csr_extract_u,%
100   csr_extract_v,%
101   csr_extract_w,%
102   csr_matrix_times_vector,%
103   csr_to_dense_matrix,%
104   cumulative_sum,%
105   determinant,%
106   diag_matrix,%
```

```
107    diag_post_multiply,%
108    diag_pre_multiply,%
109    diagonal,%
110    digamma,%
111    dims,%
112    dirichlet,%
113    dirichlet_log,%
114    dirichlet_rng,%
115    distance,%
116    dot_product,%
117    dot_self,%
118    double_exponential,%
119    double_exponential_ccdf_log,%
120    double_exponential_cdf,%
121    double_exponential_cdf_log,%
122    double_exponential_log,%
123    double_exponential_rng,%
124    e,%
125    eigenvalues_sym,%
126    eigenvectors_sym,%
127    erf,%
128    erfc,%
129    exp,%
130    exp2,%
131    exp_mod_normal,%
132    exp_mod_normal_ccdf_log,%
133    exp_mod_normal_cdf,%
134    exp_mod_normal_cdf_log,%
135    exp_mod_normal_log,%
136    exp_mod_normal_rng,%
137    expm1,%
138    exponential,%
139    exponential_ccdf_log,%
140    exponential_cdf,%
141    exponential_cdf_log,%
142    exponential_log,%
143    exponential_rng,%
144    fabs,%
145    falling_factorial,%
146    fdim,%
147    floor,%
148    fma,%
149    fmax,%
150    fmin,%
151    fmod,%
152    frechet,%
153    frechet_ccdf_log,%
154    frechet_cdf,%
155    frechet_cdf_log,%
156    frechet_log,%
```

```
157    frechet_rng,%
158    gamma,%
159    gamma_ccdf_log,%
160    gamma_cdf,%
161    gamma_cdf_log,%
162    gamma_log,%
163    gamma_p,%
164    gamma_q,%
165    gamma_rng,%
166    gaussian_dlm_obs,%
167    gaussian_dlm_obs_log,%
168    get_lp,%
169    gumbel,%
170    gumbel_ccdf_log,%
171    gumbel_cdf,%
172    gumbel_cdf_log,%
173    gumbel_log,%
174    gumbel_rng,%
175    head,%
176    hypergeometric,%
177    hypergeometric_log,%
178    hypergeometric_rng,%
179    hypot,%
180    if_else,%
181    int_step,%
182    inv,%
183    inv_chi_square,%
184    inv_chi_square_ccdf_log,%
185    inv_chi_square_cdf,%
186    inv_chi_square_cdf_log,%
187    inv_chi_square_log,%
188    inv_chi_square_rng,%
189    inv_cloglog,%
190    inv_gamma,%
191    inv_gamma_ccdf_log,%
192    inv_gamma_cdf,%
193    inv_gamma_cdf_log,%
194    inv_gamma_log,%
195    inv_gamma_rng,%
196    inv_logit,%
197    inv_phi,%
198    inv_sqrt,%
199    inv_square,%
200    inv_wishart,%
201    inv_wishart_log,%
202    inv_wishart_rng,%
203    inverse,%
204    inverse_spd,%
205    is_inf,%
206    is_nan,%
```

```
207    lbeta,%
208    lgamma,%
209    lkj_corr,%
210    lkj_corr_cholesky,%
211    lkj_corr_cholesky_log,%
212    lkj_corr_cholesky_rng,%
213    lkj_corr_log,%
214    lkj_corr_rng,%
215    lmgamma,%
216    log,%
217    log10,%
218    log1m,%
219    log1m_exp,%
220    log1m_inv_logit,%
221    log1p,%
222    log1p_exp,%
223    log2,%
224    log_determinant,%
225    log_diff_exp,%
226    log_falling_factorial,%
227    log_inv_logit,%
228    log_mix,%
229    log_rising_factorial,%
230    log_softmax,%
231    log_sum_exp,%
232    logistic,%
233    logistic_ccdf_log,%
234    logistic_cdf,%
235    logistic_cdf_log,%
236    logistic_log,%
237    logistic_rng,%
238    logit,%
239    lognormal,%
240    lognormal_ccdf_log,%
241    lognormal_cdf,%
242    lognormal_cdf_log,%
243    lognormal_log,%
244    lognormal_rng,%
245    machine_precision,%
246    max,%
247    mdivide_left_tri_low,%
248    mdivide_right_tri_low,%
249    mean,%
250    min,%
251    modified_bessel_first_kind,%
252    modified_bessel_second_kind,%
253    multi_gp,%
254    multi_gp_cholesky,%
255    multi_gp_cholesky_log,%
256    multi_gp_log,%
```

```
257    multi_normal,%
258    multi_normal_cholesky,%
259    multi_normal_cholesky_log,%
260    multi_normal_cholesky_rng,%
261    multi_normal_log,%
262    multi_normal_prec,%
263    multi_normal_prec_log,%
264    multi_normal_rng,%
265    multi_student_t,%
266    multi_student_t_log,%
267    multi_student_t_rng,%
268    multinomial,%
269    multinomial_log,%
270    multinomial_rng,%
271    multiply_log,%
272    multiply_lower_tri_self_transpose,%
273    neg_binomial,%
274    neg_binomial_2,%
275    neg_binomial_2_ccdf_log,%
276    neg_binomial_2_cdf,%
277    neg_binomial_2_cdf_log,%
278    neg_binomial_2_log,%
279    neg_binomial_2_log,%
280    neg_binomial_2_log_log,%
281    neg_binomial_2_log_rng,%
282    neg_binomial_2_rng,%
283    neg_binomial_ccdf_log,%
284    neg_binomial_cdf,%
285    neg_binomial_cdf_log,%
286    neg_binomial_log,%
287    neg_binomial_rng,%
288    negative_infinity,%
289    normal,%
290    normal_ccdf_log,%
291    normal_cdf,%
292    normal_cdf_log,%
293    normal_log,%
294    normal_rng,%
295    not_a_number,%
296    num_elements,%
297    ordered_logistic,%
298    ordered_logistic_log,%
299    ordered_logistic_rng,%
300    owens_t,%
301    pareto,%
302    pareto_ccdf_log,%
303    pareto_cdf,%
304    pareto_cdf_log,%
305    pareto_log,%
306    pareto_rng,%
```

```
307     pareto_type_2,%
308     pareto_type_2_ccdf_log,%
309     pareto_type_2_cdf,%
310     pareto_type_2_cdf_log,%
311     pareto_type_2_log,%
312     pareto_type_2_rng,%
313     pi,%
314     poisson,%
315     poisson_ccdf_log,%
316     poisson_cdf,%
317     poisson_cdf_log,%
318     poisson_log,%
319     poisson_log,%
320     poisson_log_log,%
321     poisson_log_rng,%
322     poisson_rng,%
323     positive_infinity,%
324     pow,%
325     prod,%
326     qr_Q,%
327     qr_R,%
328     quad_form,%
329     quad_form_diag,%
330     quad_form_sym,%
331     rank,%
332     rayleigh,%
333     rayleigh_ccdf_log,%
334     rayleigh_cdf,%
335     rayleigh_cdf_log,%
336     rayleigh_log,%
337     rayleigh_rng,%
338     rep_array,%
339     rep_matrix,%
340     rep_row_vector,%
341     rep_vector,%
342     rising_factorial,%
343     round,%
344     row,%
345     rows,%
346     rows_dot_product,%
347     rows_dot_self,%
348     scaled_inv_chi_square,%
349     scaled_inv_chi_square_ccdf_log,%
350     scaled_inv_chi_square_cdf,%
351     scaled_inv_chi_square_cdf_log,%
352     scaled_inv_chi_square_log,%
353     scaled_inv_chi_square_rng,%
354     sd,%
355     segment,%
356     sin,%
```

```
357     singular_values,%
358     sinh,%
359     size,%
360     skew_normal,%
361     skew_normal_ccdf_log,%
362     skew_normal_cdf,%
363     skew_normal_cdf_log,%
364     skew_normal_log,%
365     skew_normal_rng,%
366     softmax,%
367     sort_asc,%
368     sort_desc,%
369     sort_indices_asc,%
370     sort_indices_desc,%
371     sqrt,%
372     sqrt2,%
373     square,%
374     squared_distance,%
375     step,%
376     student_t,%
377     student_t_ccdf_log,%
378     student_t_cdf,%
379     student_t_cdf_log,%
380     student_t_log,%
381     student_t_rng,%
382     sub_col,%
383     sub_row,%
384     sum,%
385     tail,%
386     tan,%
387     tanh,%
388     tcrossprod,%
389     tgamma,%
390     to_array_1d,%
391     to_array_2d,%
392     to_matrix,%
393     to_row_vector,%
394     to_vector,%
395     trace,%
396     trace_gen_quad_form,%
397     trace_quad_form,%
398     trigamma,%
399     trunc,%
400     uniform,%
401     uniform_ccdf_log,%
402     uniform_cdf,%
403     uniform_cdf_log,%
404     uniform_log,%
405     uniform_rng,%
406     variance,%
```

```
407      von_mises,%
408      von_mises_log,%
409      von_mises_rng,%
410      weibull,%
411      weibull_ccdf_log,%
412      weibull_cdf,%
413      weibull_cdf_log,%
414      weibull_log,%
415      weibull_rng,%
416      wiener,%
417      wiener_log,%
418      wishart,%
419      wishart_log,%
420      wishart_rng
421    },%
422    otherkeywords={<-,~},%
423    sensitive=true,%
424    morecomment=[l]{\#},%
425    morecomment=[l]{//},%
426    morecomment=[n]{/*}{*/},%
427    string=[d]"%,
428    literate={<-}{{$\leftarrow$}}1 {~}{{$\sim$}}1%
429 }
```

Change History

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