

# Appendix D

## List of kernels

### D.1 Kernel definitions and computations

Reference	Title	Page
Definition 9.1	Polynomial kernel	292
Computation 9.6	All-subsets kernel	295
Computation 9.8	Gaussian kernel	296
Computation 9.12	ANOVA kernel	299
Computation 9.18	Alternative recursion for ANOVA kernel	302
Computation 9.24	General graph kernels	307
Definition 9.33	Exponential diffusion kernel	313
Definition 9.34	von Neumann diffusion kernel	313
Computation 9.35	Evaluating diffusion kernels	314
Computation 9.46	Evaluating randomised kernels	321
Definition 9.37	Intersection kernel	315
Definition 9.38	Union-complement kernel	316
Remark 9.40	Agreement kernel	316
Section 9.6	Kernels on real numbers	317
Remark 9.42	Spline kernels	319
Definition 9.43	Derived subsets kernel	319
Definition 10.5	Vector space kernel	331
Computation 10.8	Latent semantic kernels	338
Definition 11.7	The $p$ -spectrum kernel	348
Computation 11.10	The $p$ -spectrum recursion	349
Remark 11.13	Blended spectrum kernel	350
Computation 11.17	All-subsequences kernel	353
Computation 11.24	Fixed length subsequences kernel	358
Computation 11.33	Naive recursion for gap-weighted subsequences kernel	364
Computation 11.36	Gap-weighted subsequences kernel	366
Computation 11.45	Trie-based string kernels	373

**D.2 Kernel algorithms**

Reference	Title	Page
Algorithm 9.14	ANOVA kernel	300
Algorithm 9.25	Simple graph kernels	308
Algorithm 11.20	All–non-contiguous subsequences kernel	356
Algorithm 11.25	Fixed length subsequences kernel	358
Algorithm 11.38	Gap-weighted subsequences kernel	367
Algorithm 11.40	Character weighting string kernel	370
Algorithm 11.41	Soft matching string kernel	371
Algorithm 11.42	Gap number weighting string kernel	372
Algorithm 11.46	Trie-based $p$ -spectrum kernel	374
Algorithm 11.51	Trie-based mismatch kernel	377
Algorithm 11.54	Trie-based restricted gap-weighted kernel	380
Algorithm 11.62	Co-rooted subtree kernel	386
Algorithm 11.65	All-subtree kernel	389
Algorithm 12.8	Fixed length HMM kernel	409
Algorithm 12.14	Pair HMM kernel	415
Algorithm 12.17	Hidden tree model kernel	419
Algorithm 12.34	Fixed length Markov model Fisher kernel	435