bootstrapping

bootstrapping/agents	*Agents and tasks*	
\agSp	Agents	
\agSpYU	$\mathsf{Agents}(\mathcal{Y};\mathcal{U})$	All agents with given formats.
\agA	$\mathcal{A}$	An agent
\agExp	expl	Agent's exploration phase
\agAct	act	Agent's action phase
\agAexp	$\mathsf{expl}_{\mathcal{A}}$	Exploration phase for agent $\mathcal{A}$.
\agAact	$\mathsf{act}_{\mathcal{A}}$	Action phase for agent $\mathcal{A}$.
\agAwtor	$\mathsf{WtoR}_{\mathcal{A}}$	Map from the world to the result for the agent $\mathcal{A}$
\agAwtob	$\mathsf{WtoB}_{\mathcal{A}}$	
\agAintermediate	$\mathsf{intermediate}_{\mathcal{A}}$	
\agSucAG	$\mathsf{success}^{\mathcal{G}}_{\mathcal{A}}$	Success set for the agent $\mathcal{A}$ and goal $\mathcal{G}$.
\agRep	$\boldsymbol{m}$	Agent representation
\agRepSp	$\mathcal{M}$	Agent's model space
\agNuis	$\mathrm{G}_{\mathcal{A}}$	
\agNuisComp	$\mathrm{G}^{\perp}_{\mathcal{A}}$	Complement of $\mathrm{G}_{\mathcal{A}}$.
\agNuisObs	$\mathrm{G}^{\mathcal{Y}}_{\mathcal{A}}$	
\agNuisCmd	$\mathrm{G}^{\mathcal{U}}_{\mathcal{A}}$	
\agbbClass	$C_{\mathcal{A}}$	
\agbbClCore	$C^{0}_{\mathcal{A}}$	
\agGoal	$\mathcal{G}$	The agent's goal (a subset of $\mathsf{StocProcesses}(\mathcal{Y}\times$

articles

articles/bds	*BDS report*	
\BDSnk	$\mathsf{BDS}(n;k)$	
\bgBDSfamily	BDS	Family of BDS sensors
\bds	BDS	Bilinear dynamics system
\BDS	BDS	
\omsum{...}		omitted sum
\TT	$\boldsymbol{\mathsf{T}}$	Learned tensor
\TTe	T	?
\TP	$\boldsymbol{\mathsf{P}}$	
\TPe	P	
\TU	$\boldsymbol{\mathsf{U}}$	Learned tensor
\TUe	U	Learned tensor
\TM	$\boldsymbol{\mathsf{M}}$	Bilinear tensor in BDS dynamics
\TMe	M	Bilinear tensor in BDS dynamics
\TN	$\boldsymbol{\mathsf{N}}$	Bilinear tensor in BDS dynamics
\TNe	N	Bilinear tensor in BDS dynamics
\Tcov	$\boldsymbol{\mathsf{P}}$	Covariance of $\boldsymbol{y}$.
\Tcove	P	Covariance of $\boldsymbol{y}$.
\Tucov	$\boldsymbol{\mathsf{Q}}$	Covariance of $\boldsymbol{y}$.
\Tucove	Q	Covariance of $\boldsymbol{y}$.
\discInt	T	Discretization interval
\nearavg	$\overline{\mu}$	Average nearness

articles/bgds	*BGDS report*

\bgds	BGDS	Bilinear gradient dynamics system
\BGDS	BGDS	
\bgCmd	$\boldsymbol{u}$	commands
\bgCmdH	$\boldsymbol{u}^{\mathbb{T}}$	commands history
\bgCmdSp	$\mathcal{U}$	commands space
\bgWorld	W	World
\bgWorldSp	$\mathcal{W}$	World space
		$\mathsf{W} \in \mathcal{D}(\mathbb{T}, \mathcal{U}, \mathcal{Y})$ `$\bgWorld \in \bgRSSp(\bgTime, \bgCmdSp, \bgObsSp`
\bgAgent	agent	Agent
\bgAgentEx	learn	Agent exploration
\bgAgentAc	act	Agent action
\bgAgentRep	$\boldsymbol{r}$	Agent representation
\bgAgentRepSp	$\mathcal{R}$	Agent representation space
\bgAgentSp	Agents	Agent action
\bgCmdTr	$\boldsymbol{g}$	Transformation of the commands
\bgCmdTrSp	$\mathrm{G}^{\mathcal{U}}$	
\bgObsTr	$\boldsymbol{h}$	Transformation of the observations
\bgObsTrSp	$\mathrm{G}^{\mathcal{Y}}$	
\bgSamplingGroup	$\mathsf{Sampling}$	Groups of sampling operations
\bgCalibration	Calib	Calibration operation
\bgBDSagent	A_{BDS}	The BDS agent
\bgBGDSagent	A_{BGDS}	The BGDS agent
\bgPopCode	pop	Popoulation code
\bgRankCode	$\mathsf{rankcode}$	Rank code
\bgRangeFamily	RF	Family of range-finders models
\bgCmdConstraints	$\Omega_{\boldsymbol{u}}$	
\bgPopK	ψ	

articles/bgds/old	*BGDS report*	
\state	$\boldsymbol{x}$	Generic underlying state.
\detecte	d	Detector
\submean{...}		Quantity with mean normalized.
\dist	σ	Distance to obstacle
\distn	σ^*	Distance to obstacle, mean normalized.
\rfnl	β	Nonlinear function in range-finder tensors.
\near	μ	Nearness
\lum	y	Luminance
\lumn	y^*	Luminance, mean normalized
\sptran	$\boldsymbol{\ell}$	Sensor pose (translation)
\sprot	ℓ_θ	Sensor pose (rotation)
\slvel	$\boldsymbol{v}^{\boldsymbol{s}}$	Sensor linear velocity (when off axis)
\savel	$\boldsymbol{\omega}^{\boldsymbol{s}}$	Sensor angular velocity (when off axis)
\TX	$\mathbf{X}$	Generic metric
\TXe	X	Generic metric
\OS	S	$S = s \times \nabla$
\convf	f_*	Indicates the convolution with a kernel f.
\my	m	Metric on the tangent space of $y(s)$.
\ip{...}		
\bgBGDSfamily	BGDS	Family of BGDS sensors

\BGDSsk	$\mathsf{BGDS}(\mathcal{S}; k)$	
\focal	F	Pinhole camera focal length.
\traindist	p_{T}	Training distribution.
\trainsym	$\mathsf{Sym}(p_{\mathrm{T}})$	Symmetry group of p_{T}.

articles/bgds/logical	*Gradient dynamics*	
\obslsp	$\mathcal{Z}$	Observation logical space
\obsl	$\boldsymbol{z}$	Observations in logical space
\obsle	z	Observation logical space element
\xtos	φ	Mapping between $\mathcal{S}$ and $\mathcal{Z}$.
\jac	$\mathbf{J}$	Jacobian of φ
\jace	J	An element of the Jacobian of φ.
\mz	μ	Metric on the tangent space of $z(x)$.
\mmu	M	Metric for the commands u.

articles/bgds/logical/grads	*Gradient dynamics*	
\Tzgd	$\mathbf{L}$	$\boldsymbol{z}$ gradient dynamics
\Tzgde	L	$\boldsymbol{z}$ gradient dynamics (element)
\Tzgl	$\mathbf{M}$	$\boldsymbol{z}$ gradient learned tensor
\Tzgle	M	$\boldsymbol{z}$ gradient learned tensor (element)
\Tzgcov	$\mathbf{S}$	$\boldsymbol{z}$ gradient covariance
\Tzgcove	S	$\boldsymbol{z}$ gradient covariance (element)
\Tzad	$\mathbf{E}$	Affine part of dynamics.
\Tzade	E	Affine part of dynamics (element)
\Tzal	$\mathbf{F}$	Learned affine part of dynamics.
\Tzale	F	Learned affine part of dynamics (element)

articles/bgds/tensors	*BGDS report*	
\Tygd	$\mathbf{G}$	$\boldsymbol{y}$ gradient dynamics
\Tygde	G	$\boldsymbol{y}$ gradient dynamics (element)
\Tygl	$\mathbf{H}$	$\boldsymbol{y}$ gradient learned tensor
\Tygle	H	$\boldsymbol{y}$ gradient learned tensor (element)
\Tygcov	$\mathbf{R}$	$\boldsymbol{y}$ gradient covariance
\Tygcove	R	$\boldsymbol{y}$ gradient covariance (element)
\Tyad	$\mathbf{B}$	Affine part of dynamics.
\Tyade	B	Affine part of dynamics (element)
\Tyal	$\mathbf{C}$	Learned affine part of dynamics.
\Tyale	C	Learned affine part of dynamics (element)

articles/bgds/models/deprecated	*Definition of random models*	
\bgTime	$\mathbb{T}$	Time axis
\bgRS	$\boldsymbol{D}$	Random model
\bgRSSp	$\mathcal{D}$	All models
\bgRSinput	$\boldsymbol{a}$	Input signal
\bgRSinputSp	$\mathcal{A}$	
\bgRSinputH	$\boldsymbol{a}^{\mathbb{T}}$	History of input signal
\bgRSoutput	$\boldsymbol{b}$	
\bgRSoutputH	$\boldsymbol{b}^{\mathbb{T}}$	History of output signal
\bgRSoutputSp	$\mathcal{B}$	
\bgRSinputTr	$\boldsymbol{g}$	
\bgRSinputTrSp	$\mathrm{G}^{\mathcal{A}}$	

\bgRSoutputTr	$\boldsymbol{h}$	
\bgRSoutputTrSp	$\mathrm{G}^{\mathcal{B}}$	
\bgObs	$\boldsymbol{y}$	observations
\bgObsH	$\boldsymbol{y}^{\mathbb{T}}$	observations history
\bgObsSp	$\mathcal{Y}$	observation space

articles/camera	*Camera paper*	
\rank	order	
\place	place	
\ff	f	Distance to similarity function
\Sany	$\mathcal{M}$	Generic hypersphere
\targetSp	$\mathcal{M}$	Target manifold
\Ssubset	M	A subset of $\mathcal{M}$ XXX
\infr	infr	Informative radius
\ffr	infr(f)	Informative radius of f
\distradius	rad	Radius of a distribution
\distdiam	diam	Diameter of a distribution
\hausdorff	hausdorff	Hausdorff distance
\kimberley	kim	Kimberley value
\errproc	e_{pr}	Procrustes score
\isoError	e_{iso}	
\symError	e_{sym}	
\relError	e_{r}	
\scaledRelError	e_{sr}	
\angcorr	ρ_θ	
\spearperf	ρ_{sp}	Spearman performance measure
\spearperfn	ρ^*_{sp}	Normalized Spearman performance measure
\dirset	$\mathcal{S}$	Set of directions
\dirmat	$\mathbf{S}$	Directions stacked in a matrix
\matX	$\mathbf{X}$	
\matI	$\mathbf{I}$	
\arot	$\mathbf{X}$	
\cosmat	$\mathbf{C}$	
\cosmatij	C_{ij}	
\distmat	$\mathbf{D}$	
\distmatij	D_{ij}	
\simmat	$\mathbf{Y}$	Similarity matrix
\simmatij	Y_{ij}	
\simmatii	Y_{ii}	
\simmatkl	Y_{kl}	
\algorparam	γ	
\shannon	H	
\fov	FOV	field of view
\SKalgo	SK	Shepard-Kruscall algorithm
\SBSEw	$SKv + w$	An extension to the SK algorithm
\SBSE	SKv	An extension to the SK algorithm (without warp

articles/dds	*DDS report*	
\ddsres	ρ	Resolution of the sensor in a DDS.
\ddsarea	$\lvert\mathcal{S}\rvert$	Area of the manifold $\mathcal{S}$.
\ddsbound	$d_{\max}$	Bound on the maximum diffeomorphism in a DD

\DDS	DDS	
\dds	DDS	
\ddsl	DDSL	
\DDSsu	$\mathsf{DDS}(\mathcal{S};\mathcal{U})$	
\DDSLsvu	$\mathsf{DDSL}(\mathcal{S},\mathcal{V};\mathcal{U})$	
\bgDDSfamily	DDS	
\bgDDSLfamily	DDSL	
\diffeoURL	*???*	Model
\cmdAlphabet	$\mathcal{U}$	
\ncmdwords	$\lvert\mathcal{U}\rvert$	Number of commands words.
\obsspD	$d^{\mathcal{S}}$	Metric on $\mathcal{S}$.
\diffId	$\mathsf{Id}_{\mathcal{S}}$	Identity diffeomorphisms.
\diffU	Γ	Uncertainty of estimated diffeomorphism.
\diffDist	d^{Diff}	Distance between two diffeomorphism.
\cmdDist	$\mathcal{D}_{\mathrm{cmd}}$	Distance between two commands.
\cmdADist	$\mathcal{A}_{\mathrm{cmd}}$	Anti-distance between two commands.
\images	$\mathbb{F}(\mathcal{S})$	
\ddsfov	$\mathcal{V}$	Field of view for DDS

articles/estgroups — *Estimation with symmetries*

articles/estgroups/state — *State*

\esSt	$\boldsymbol{x}$	State
\esStDim	n	Dimension of state space
\esStSp	$\mathcal{X}$	State space
\esStDist	$\mu_{\boldsymbol{x}}^{\mathcal{X}}$	Prior for state

articles/estgroups/observations — *Observations*

\esObs	$\boldsymbol{y}$	Observations
\esObsDim	m	Observations dimensions
\esObsSp	$\mathcal{Y}$	Observations space
\esObsMap	h	Observation map

$\boldsymbol{y} = \boldsymbol{n}h(\boldsymbol{x})$

```
$\esObs = \esNuis \esObsMap(\esSt)$
```

articles/estgroups/nuisances — *Nuisances*

\esNuis	$\boldsymbol{n}$	Nuisance
\esNuisSp	N	Nuisance group
\esNuisDist	$\mu_{\boldsymbol{n}}^{\mathrm{N}}$	Nuisance distribution

articles/estgroups/estimators — *Estimators, risks and performances*

\esEst	m	Estimator
\esEstSp	$\mathcal{M}$	Estimator set
\esEstSpOpt	$\mathcal{M}^{\star}$	Optimal subset of estimators
\esRisk	e	Risk function
\esRiskSp	$\mathcal{E}$	Risk space
\esRiskDist{...}		Risk distribution for given estimator
\esRiskDistPO	$\preceq$	Partial order defining preference on distributions
\esProb	$\mathcal{P}$	Estimation problem

articles/estgroups/symmetries	*Symmetries in the problem*	
\esStAb	$\boldsymbol{\alpha}$	Abstract state
\esStAbSp	$\mathcal{A}$	Abstract space
\esRep	φ	Representation
		$\varphi : \boldsymbol{x} \mapsto \boldsymbol{\alpha}$. `$\esRep: \esSt \mapsto \esStAb$.`
\esStSym	A	Group of symmetries of the state
\esObsSym	B	Group of symmetries of the observation
\esRiskSym	C	Group of symmetries of the risk function
\esPOSym	D	Group of symmetries acting on the partial order
\esProbSym	$\mathcal{S}$	Tuple of symmetries

articles/groupspectral	*Group spectral properties*	
\gsHom	HomMaps	Induced homomorphisms.
\gsImage	Image	
\gsEqs	EqSet	Fixed points of a function.
\gsGA	GrAct	If the function is the action of a group.
\gsGAsym	$\|\|$	Used to specify that a function can be expressed
\gsSym	Sym	Set of symmetries
\gsStrongCan	SCan	Strong canonization operator
\gsWeakCan	WCan	Weak canonization operator
\gsEquiCan	BCan	Bold canonization operator
\gsEndoCan	MCan	Mild canonization operator
\gsUnCan	UCan	Unstructured canonization operator
\gsNuis	Sample	
\regular	regular	
\unstr	$\sim$	Unstructured symbol.
\jokFunc	$\star$	Joker function
\zerFunc	0	Zero function

articles/groupspectral/defs	*Group spectral properties*	
\gsdContravariant	$\xrightarrow{-1}$	Contravariance
\gsdInvariant	$\xrightarrow{0}$	Invariance
\gsdEquivariant	$\xrightarrow{\mathsf{Id}}$	Equivariance
\gsdIntroduces	$\xrightarrow{\star}$	Nuisance introduced
\gsdUnstructured	$\xrightarrow{\sim}$	Unstructured result

articles/invariances	*Invariances*	
\rndual{...}		Dual of a representation nuisance

articles/soattotheory	*Symbols used by Soatto*	
\scene	ξ	scene
\representation	$\hat{\xi}$	representation
\minrep	$\hat{\xi}^{\vee}$	minimal representation
\feature	ϕ	feature
\maxinv	$\phi^{\wedge}$	maximal invariant feature
\suffstat	$\phi^{\vee}$	maximal invariant feature
\image	$\mathcal{I}$	image
\addnoise	n	additive noise
\imageform	h	image formation function

\groupnuis	g	nuisance which have the structure of a group
\othernuis	ν	other non-invertible nuisance
\lightfield	$\mathcal{L}$	all possible images generated by a scene
\complex	H	Complexity measure
\actinfo	$\mathcal{H}$	Actionable information
\covdet	ψ	Covariant detector

articles/thesis	*Special symbols for thesis*	
\labelrefinement	ref	Indicates a refinement
\pchomeoR	$\mathsf{PieceHomeo}(\mathbb{R})$	
\dianode{...}		used in properties1.dot
\dianodem{...}		
\bitZ	$\square$	
\bitO	$\boxdot$	
\infbinstrings	$\{\square, \boxdot\}^{\mathbb{N}}$	Set of infinite binary strings
\chineseClose	(nosummary)	The Chinese character corresponding to "close"
\twosignals	y^i, y^j	
\twosignalsa	y^i	
\twosignalsb	y^j	
\twosignalscolon	$y^i; y^j$	
\semrelorder	m	Order of a generic semantic relations
\infinit	d	Infinitesimal
\genericsemrel	$\mathcal{R}$	A generic semantic relation.
\gensemrelsym	$\mathsf{Sym}(\mathcal{R})$	Symmetries of the semantic relation
\genericsimilarity	R	A generic similarity measure.
\obsecdf	c	CDF of one sensel
\cmdreverse	ρ	The map from a command to its reverse.
\cmdopt	$\boldsymbol{u}^\star$	The optimal command
\cmdnop	$\boldsymbol{u}^{\mathsf{nop}}$	Command corresponding to "resting".
\rew	R	Reward function
\placeneig	$\mathsf{Neighbors}$	
\genericrel	$\sim$	Generic relation
\notgenericrel	$\not\sim$	

articles/thesis/longexample	*Long example*
\CalibA	CalibA
\CalibB	CalibB
\Smoothkernel	k
\Smooth	Smooth_k
\BGDSAg	$\mathsf{BGDSagent}$
\BGDSAgS	$\mathsf{BGDSagentS}$
\DImagesU	$\mathcal{D}(\mathsf{Images}(\mathcal{S}); \mathcal{U})$
\DImagesR	$\mathcal{D}(\mathsf{Images}(\mathcal{S}); \mathbb{R}^{n_{\boldsymbol{u}}})$
\ABehavior	*behavior*
\DImagesSphU	$\mathcal{D}(\mathsf{Images}(\mathbb{S}^2); \mathcal{U})$
\hobs	$\boldsymbol{x}$
\hobse	x
\bound	M

common	*Common symbols to all papers*

common/abbreviations	*Other abbrevations*
\setA	$\mathcal{A}$
\setB	$\mathcal{B}$
\setC	$\mathcal{C}$
\setU	$\mathcal{U}$
\setM	$\mathcal{M}$
\setY	$\mathcal{Y}$
\setX	$\mathcal{X}$
\setZ	$\mathcal{Z}$
\setS	$\mathcal{S}$
\grG	G
\grH	H
\grK	K
\grN	N

common/abbreviations/invariances/abbreviations	
\sqa	$\boldsymbol{a}$
\sqae	a
\sqb	$\boldsymbol{b}$
\sqbe	b
\sqc	$\boldsymbol{c}$
\sqce	c

common/acronyms	*Acronyms*

common/algebra	*Algebra*	
\ones	$\mathbf{1}$	
\idMat	$\mathbf{I}$	Identity matrix
\matTrace	Tr	Trace of a matrix.
\angleFun	$\angle$	Angle function
\flatten	vec	Matrix-to-vector rearrangement.

common/basic	*Basic stuff*	
\setfun	$\rightrightarrows$	Symbol for set functions (one-to-many)
\algfield	field	Field.
		$\mathsf{field}(\mathcal{X},+,\times)$ is an algebraic field. `$\algfield(\aset{X},+,\times)$ is an algebraic fi`
\wellorder	$\mathsf{wellorder}$	A well ordered set.
		$\mathsf{wellorder}(\mathcal{X},\leq)$ is a well-ordered set. `$\wellorder(\aset{X},\leq)$ is a well-ordered set`
\orderedfield	$\mathsf{orderedfield}$	A well ordered field.
		$\mathsf{orderedfield}(\mathcal{X},+,\times,\leq)$ is a well-ordered field. `$\orderedfield(\aset{X},+,\times,\leq)$ is a well-ordered field.`
\powerset	$\mathsf{powerset}$	Power set of a space
\supp	supp	Support of a set
\idFunc	Id	The identity function
\invFunc	$.^{-1}$	Inverse function
\funcComp	$\circ$	Function composition
\emptysequence	$\emptyset$	Empty sequence

\allFuncs	Functions	All maps from a space to the other
\D	d	Used for integrals
\sign	sgn	Sign function

common/sequences	*Sequences*	
\sequences	Sequences	Set of sequences
\contsequences	ContSequences	Set of continuous sequences
\Aut	Aut	Automorphism group
\contFuncs	Continuous	Continuous functions on some metric space
		Continuous($\mathcal{A}$) are all continuous functions on $\mathcal{A}$ `$\contFuncs(\setA)$ are all continuous functions on $\setA$.`
\differFuncs	Differentiable	Differentiable functions
\partitions	partitions	
\mExp	mexp	Matrix exponential
\bigO	$\mathcal{O}$	Big-O notation
\smallo	o	
\metricon{...}		
\definedas	$\triangleq$	
\crossprod	$\times$	cross-product
\gsDom	Domain	
\gsCod	Codomain	
\interCC{...,...}		
\interCO{...,...}		
\interOC{...,...}		
\interOO{...,...}		
\unitInterval	$[0, 1]$	

common/basic/logic	*Logic*	
\logicAnd	$\wedge$	Logic "and"
\logicOr	$\vee$	Logic "or"
\logicNot	$\neg$	Logic "not"

common/simplesets	*Simple sets*	
\reals	$\mathbb{R}$	Real numbers
\natnumbers	$\mathbb{N}$	Natural numbers
\ratnumbers	$\mathbb{Q}$	Rational numbers
\hreals	$*\mathbb{R}$	Hyper-real numbers
\nonNegReals	$\mathbb{R}^+_\bullet$	Non negative reals
\posReals	$\mathbb{R}^+_\circ$	Strictly positive reals
\nzReals	$\mathbb{R}_\circ$	Non zero reals

common/blackboxes	*Black boxes*	
\abb{...}		A black box
\bbD	$\boldsymbol{D}$	
\bbinv{...}		Inverse of a black box
\bbli{...}		left inverse of a black box
\bbri{...}		right inverse of a black box
\alloutcomes	AllOutcomes	
\alloutputs	AllOutputs	All outputs of a given system
\bbDelay	Δ	The one-step delay system.

\vertblock	I	
\bbAccum	III	Accumulator system
\inLoop	Loop	Closes the loop around a system
\idSys	IdSys	The identity system
\bbSp	$\mathcal{D}$	Set of black boxes
		$\mathcal{D}(\mathcal{X};\mathcal{Y})$ are all the black boxes from $\mathcal{X}$ to $\mathcal{Y}$. `$\bbSp(\setX;\setY)$ are all the black boxes from $\setX$ to $\setY$.`
\bbFM	$\mathcal{D}_{\mathsf{fm}}$	Systems with finite memory
\bbSpInv	$\mathcal{D}^{\star}$	Set of invertible systems
\bbFMinv	$\mathcal{D}^{\star}_{\mathsf{fm}}$	Systems with finite memory and invertible
\bbSpIns	$\mathcal{D}_{\mathrm{inst}}$	Set of instantaneous systems
\bbSpDet	$\mathcal{D}_{\mathrm{det}}$	Deterministic systems
\bbSpInvIns	$\mathcal{D}^{\star}_{\mathrm{inst}}$	Set of invertible and instantaneous systems.
		$\mathcal{D}^{\star}(\mathcal{A})$ is a subset of $\mathcal{D}(\mathcal{A};\mathcal{A})$ `$\bbSpInv(\setA)$ is a subset of ${\bbSp(\setA;\setA)}$`
\bbSpCore	$\mathcal{D}^{\circ}$	Systems up to representation

common/blackboxes/abbreviations

\bbDinv	$\boldsymbol{D}^{-1}$	
\bbDri	$\boldsymbol{D}^{R}$	
\bbDli	$\boldsymbol{D}^{L}$	
\bbE	$\boldsymbol{E}$	
\bbF	$\boldsymbol{F}$	
\bbG	$\boldsymbol{G}$	
\bbSpBA	$\mathcal{D}(\mathcal{B};\mathcal{A})$	**to write**
\bbSpAB	$\mathcal{D}(\mathcal{A};\mathcal{B})$	**to write**

common/blackboxes/deprecated *Deprecated*

\bbOp	$\oplus$	Composition operation
\inSeries	Series	Series of two systems

common/boot *Bootstrapping symbols*

common/boot/obscmd *Observations and commands*

\world	$\boldsymbol{w}$	The "world", an element of $\mathcal{D}(\mathcal{Y};\mathcal{U})$.
\obs	$\boldsymbol{y}$	Observations.
\obse	y	Observations (element) – also called "sensel"
\cmd	$\boldsymbol{u}$	Commands, in general.
\cmde	u	Commands (element) – also called "?".
\nobs	$n_{\boldsymbol{y}}$	Number of sensels
\ncmd	$n_{\boldsymbol{u}}$	Number of actuators
\obsSp	$\mathcal{Y}$	Observation space
\cmdSp	$\mathcal{U}$	Commands space
\cmdSph	$\overline{\mathcal{U}}$	Domain of a single actuator $\mathcal{U} = \overline{\mathcal{U}}^{n_{\boldsymbol{u}}}$.
\obsSph	$\overline{\mathcal{Y}}$	Domain of a single sensel $\mathcal{Y} = \overline{\mathcal{Y}}^{n_{\boldsymbol{y}}}$.
\obsSphd	$d^{\overline{\mathcal{Y}}}$	Metric on $d^{\overline{\mathcal{Y}}}$
\obsSpd	$d^{\mathcal{Y}}$	Metric on $d^{\mathcal{Y}}$

common/boot/spatialsensors	*Spatial sensors*	
\obssp	$\mathcal{S}$	Observation physical space.
\obsps	$\mathcal{S}$	Observation physical space.
\genimages	Images	Images on physical space $\mathcal{S}$.
\imps	Images($\mathcal{S}$)	Images on physical space $\mathcal{S}$.

common/boot/servo	*Servoing*	
\obsg	$\check{\boldsymbol{y}}$	Goal observations.
\obsge	$\check{y}$	Goal observations (element).
\obsgl	$\check{\boldsymbol{z}}$	Goal observations (element).
\obsgle	$\check{z}$	Goal observations (element).

common/boot/abbreviations	*Abbreviations*	
\bbSpYU	$\mathcal{D}(\mathcal{Y};\mathcal{U})$	**to write**
\bbSpUY	$\mathcal{D}(\mathcal{U};\mathcal{Y})$	**to write**
\bbSpInvY	$\mathcal{D}^\star(\mathcal{Y})$	Representation nuisances on commands
\bbSpInvU	$\mathcal{D}^\star(\mathcal{U})$	Representation nuisances on observations
\bbSpInvYU	$\mathcal{D}^\star(\mathcal{Y};\mathcal{U})$	Representation nuisances
\bbSpInvUY	$\mathcal{D}^\star(\mathcal{U};\mathcal{Y})$	
\bbSpCoreYU	$\mathcal{D}^\circ(\mathcal{Y};\mathcal{U})$	Systems up to representation

common/vehicles	*The Vehicles universe*	
\veEnvironments	Environments	All Vehicles environments
\veSensors	Sensors	all Vehicles sensors
\veDynamics	Dynamics	all Vehicles dynamics
\veVehicles	Vehicles	all Vehicles dynamics
\veSce	S	
\veVeh	V	
\veMov	M	
\veAdd	A	
\veJoi	J	
\vePar	P	Parallel composition of sensors
\veNcmd	U	
\veNobs	Y	

common/expressions	*Miscellaneous expressions*	
\etal	*et. al.*	
\eg	*e.g.*,	
\etc	*etc.*	
\ie	*i.e.*,	
\ala	*à la*	
\viceversa	*vice versa*	
\vs	*vs*	Versus
\adhoc	*ad hoc*	
\apriori	*a priori*	

common/goodformulas	*Better formulas annotations*	
\expl{...}		Explanation in formulas
\highA{...}		Highlight something in formulas (observations)
\highB{...}		Highlight something in formulas (commands)
\highC{...}		both observations and commands

common/yesorno	*Miscellaneous functions for document formatting*	
\ns		
\tickYes	✓	
\tickNo	7	
\NA	n/a	
\coltickNo	7	
\yes	✓	
\no	7	
\onehalf	$\frac{1}{2}$	small one half
\smPO	$+1$	Small plus one
\smMO	-1	Small minus one (e.g. in smallmatrix)

common/incomplete	*Incomplete symbols*	
\AC{...}		Marker for sections to write
\ac{...}		
\towrite	**to write**	Marker for sections to write
\placeholder{...,...}		A placeholder
\tocite{...}		
\citeboh	$[xxx]$	
\xxx	*???*	
\notsure	**(Not sure...)**	
\dontlike	**(Don't like this)**	
\notformal	**(not formal)**	
\betterword{...}		
\boh	*???*	incomplete
\bn		bad notation, this should change later
\checkbadformat		incomplete
\prooftowritesomeday		
\myrule{...,...}		
\unitInverval	$[0,1]$	

common/geometry	*Differential geometry*	
\diff	Diff	Diffeomorphism
		$\mathsf{Diff}(\mathcal{M})$ are the diffeomeorphisms from $\mathcal{M}$ to its `$\diff(\aset{M})$ are the diffeomeorphisms from $\aset{M}$ to itself.`
\diffPos	Diff_+	Orientation-preserving diffeomorphism.
\homeoPos	Homeo_+	Orientation-preserving homeomorphisms (of the
\diffBounded{...}		Diffeomorphisms with bounded curvature
\diffVol	$\mathsf{Diff}_{\mathrm{vol}}$	
\homeo	Homeo	Set of all homeomorphisms
\isometries	Isom	Isometries group
		$\mathsf{Isom}(\mathcal{M})$ are all the isometries of $\mathcal{M}$. `$\isometries(\aset{M})$ are all the isometries of $\aset{M}$.`
\diffFix{...}		Diffeomorphisms that fix a point
\conformalFuncs	$\mathsf{Conformal}$	Conformal transformations

common/geometry/manifolds	*Manifolds*

\Sone	$\mathbb{S}^1$	Unit circle.
\Stwo	$\mathbb{S}^2$	Unit sphere.
\stwo	$\mathbb{S}^2$	Unit sphere
\hypsp	$\mathbb{H}$	
\hypspn	$\mathbb{H}^n$	

common/groups	*Group theory*	
\gIdentity	e	Identity of a group
\tgroup	group	Group set with operations
		group$(\mathrm{G},\cdot)$ means G is a group under $\cdot$. `$\tgroup(\agroup{G},\cdot)$ means $\agroup{G}$ is group under $\cdot$.`
\haar	haar	Haar measure
		The Haar measure on $\mathcal{X}$ is haar^{X}. `The Haar measure on $\aset{X}$ is ${\haar}{\hat{X}}$.`

common/groups/famous	*Famous groups*	
\idGroup	Id	The trivial group with identity only.
\permutations	Perm	Set of permutation
\stab{...}		Stabilizer of a set
\functionsym{...}		Symmetries of a function
\allsubgroups	AllSubgroups	
\comgroup{...}		Commutator sub group
\groupJoin	$\vee$	Group join
\groupconj{...}		Conjugation
\groupquotient	/	Group quotient
\groupsemidir	$\rtimes$	Semidirect product.
\groupisom	$\cong$	Isomorphism
\issubgroup	$\leq$	Subgroup relation.
\normalsub	$\triangleleft$	Normal subgroup relation
\actionsymbol	$\cdot$	Group action.
\companionFuncs{...}		Companions functions
\transversalFuncs{...}		Transversal functions

common/groups/matrix	*Matrix groups*	
\orthogroup	O	Orthogonal group.
\trangroup	T	Translation group
\segroup	SE	Special Euclidean group.
\Egroup	E	Euclidean group.
\SLgroup	SL	Special linear group
\Diaggroup	D	Diagonal matrices with non-zero elements.
\PMgroup	$\mathsf{D}_{\pm}$	Diagonal matrices with ± 1 on the diagonal.
\Scalegroup	Sc	Multiples of the identity
\sogroup	SO	Special orthogonal group.
\soneggroup	SO^{-}	
\affgroup	Aff	Affine group
\affgrouppos	Aff_{+}	Affine group
\GL	GL	General linear group
\GLpos	GL_{+}	
\se	se	Special Euclidean algebra

\soalgebra	so	
\sealgebra	se	Special Euclidean algebra
\sothree	$\mathrm{SO}(3)$	Special orthogonal group (rotation matrices)
\sethree	$\mathrm{SE}(3)$	Special Euclidean group
\setwo	$\mathrm{SE}(2)$	Special Euclidean group

common/groups/simple	*Very simple groups*	
\mgroup	$(\mathbb{R}_\circ, \times)$	Multiplication group
\mposgroup	$(\mathbb{R}_\circ^+, \times)$	Positive multiplication group
\mpmgroup	$(\pm 1, \times)$	+1/-1 multiplication group
\addgroup	$(\mathbb{R}, +)$	Addition group

common/groups/simple/abbreviations	*Abbreviations*	
\addgroupn	$(\mathbb{R}^n, +)$	Addition group on $\mathbb{R}^n$
\affone	$\mathsf{Aff}(\mathbb{R})$	Affine group 1D
\affonepos	$\mathsf{Aff}_+(\mathbb{R})$	Affine group 1D
\affn	$\mathsf{Aff}(\mathbb{R}^n)$	Affine group in n dimensions.
\affnpos	$\mathsf{Aff}_+(\mathbb{R}^n)$	Affine transformations preserving orientations.

common/probability	*Probability*	
\uniformdist	Uniform	Uniform distribution
\measuresupport	Support	Support of a probability measure
\processes	StocProcesses	Set of stochastic processes
\conditional	Conditional	Conditional distribution
		Conditional$(\mathcal{B};\mathcal{A})$ is the set of conditional distributions `$\conditional(\setB;\setA)$ is the set of conditional distributions`
\finaldist	Final	Stationary distribution of a stochastic process.
\measureSp	meas	Measure space.
		meas$(\mathcal{X}, \Sigma, \mu)$ is a measure space. `$\measureSp(\aset{X},\Sigma,\mu)$ is a measure space.`
\probSp	prob	Probability space.
		prob$(\mathcal{X}, \Sigma, \mu)$ is a probability space. `$\probSp(\aset{X},\Sigma,\mu)$ is a probability space.`
\measures	ProbMeasures	Set of probability measures on a set.
		Try $\mu^{\mathcal{X}} \in$ ProbMeasures$(\mathcal{X})$ `Try $\mu^{\aset{X}} \in \measures(\aset{X})$`
\dirac	δ	

common/robotics	*Robotics*	
\obsip	m	Inner product bilinear form.
\obsosp	$\mathcal{O}$	Observation output space.
\dummySensel	s	
\pose	$\boldsymbol{q}$	Robot pose $\boldsymbol{q} = (\boldsymbol{t}, \mathbf{R}) \in \mathcal{Q} \subset \mathrm{SE}(3)$.
\posesp	$\mathcal{Q}$	Pose space, subgroup of SE(3).
\confspace	$\mathcal{Q}$	Robot configuration space
\pos	$\boldsymbol{t}$	Position in the world frame.
\rotm	$\mathbf{R}$	Rotation matrix representing orientation in the

\lvel	$\boldsymbol{v}$	Linear velocity
\lvele	v	Linear velocity (element)
\avel	$\boldsymbol{\omega}$	Angular velocity (as vector)
\avels	ω	Angular velocity in 2D (scalar)
\avelse	$\hat{\boldsymbol{\omega}}$	Angular velocity (as skew-symmetric matrix)
\njoints	n_j	Number of joints in a robot
\attitude	$\mathbf{R}$	
\position	$\boldsymbol{t}$	

common/robotics/fieldsmapler	*Field samplers*	
\field	$\mathcal{F}$	Field sampled by the field sensor.
\fieldpos	$\boldsymbol{z}$	Generic position in the world.

common/robotics/old	*Deprecated*	
\wshape	$\boldsymbol{s}$	
\wpose	$\boldsymbol{p}$	
\worldsp	Maps	
\wshapesp	Shapes	

common/robotics/maps	*New stuff*	
\mshape	$\boldsymbol{s}$	Map shape.
\mpose	$\boldsymbol{p}$	Map pose.
\mshapesp	Shapes	Shape space.
\mapsp	Maps	Maps set $\mathsf{Maps} = \mathsf{Shapes} \times \mathrm{SE}(3)$.

common/statistics	*Misc statistics*	
\stddev	std	Standard deviation
\var	var	Variance
\ex	$\mathbb{E}$	Expected value
\corr	corr	
\cov	cov	covariance
\spearcorr	spear	Spearman correlation between two variables
\mutualinf	$\mathcal{I}$	Mutual information
\entr	$\mathcal{H}$	Entropy
\varinf	$\mathcal{V}$	Variation of information
\varinfn	$\mathcal{V}_1$	Normalized variation of information
\pushedforward{...}		Pushed forward notation
\distributedAs	$\sim$	Distributed as

common/statistics/sorting	*Sorting vectors*	
\order	order	Order (or rank) of the elements of a vector.
\sorted	sorted	Sorted version of a vector
\differ	differ	
\sortedSeq	sortedSeq	
\weaksortedSeq	weaksortedSeq	

common/systems	*Dynamical systems*	
\CTI	CTI	Continuous-time time-invariant systems.
\DTI	DTI	Discrete-time time-invariant systems.
\DDTI	DDTI	Deterministic discrete-time time-invariant syster
\DCTI	CDTI	Deterministic continuous-time time-invariant sys

\DFSTI	DFSTI	Discrete-time finite-state-space time-invariant sy
\CFSTI	CFSTI	Continuous-time finite-state-space time-invariant
\DFSTIGO	DFSTIGO	Discrete-time finite-state-space time-invariant sy
\CLTI	CLTI	Continuous-time linear time-invariant systems
\CLTIG	CLTIG	Continuous-time linear time-invariant systems w
\DLTI	DLTI	Discrete-time linear time-invariant systems
\DSMPLTI	DSMPLTI	Discrete-time stable minimum-phase linear time-
\DLTIG	DLTIG	Discrete-time linear time-invariant systems with
\laptrans	$\mathcal{L}$	Laplace transform
\impulseresp	ImpulseResp	Impulse response of a system
\transferfunc	TF	Transfer function

typography — *Basic typography*

\myacronym{...}	All acronyms; good for text as well as math mod

typography/tensors — *Tensors and tensor elements*

\T{...}	Tensor
\Tel{...}	Tensor element
\Te{...}	

typography/matrices — *Matrices and matrix elements*

\M{...}	A matrix
\Mel{...}	The elements of a matrix

typography/sets — *Sets*

\aset{...}	A set
\agroup{...}	Fonts for a set which is a group.

A set $\mathcal{X}$, a group X, G, …

```
A set $\aset{X}$, a group $\agroup{X}$, $\agroup{
\dots
```

\aseq{...}	Formatting for sequences
\aseqe{...}	Formatting for one element in a sequence
\dummyIndices	

typography/misc — *Everything else*

\aword{...}	How words should look like in formulas.

Consider the operator scale, …

```
Consider the operator $\aword{scale}$, \dots
```

\vmath{...}	How words should appear in math mode.