bootstrapping/agents	Agents and tasks	
\agSp	Agents	
\agSpYU	$Agents(\mathfrak{Y};\mathcal{U})$	All agents with given formats.
\agA	${\cal A}$	An agent
\agExp	expl	Agent's exploration phase
\agAct	act	Agent's action phase
\agAexp	$expl_{\mathcal{A}}$	Exploration phase for agent A .
\agAact	$\operatorname{act}_{\mathcal{A}}$	Action phase for agent A .
\agAwtor	$WtoR_\mathcal{A}$	Map from the world to the result for the
\agAwtob	$WtoB_\mathcal{A}$	nap nom one world to one result for the
\agAintermediate	$intermediate_{\mathcal{A}}$	
\agSucAG	$\operatorname{success}_{\mathcal{A}}^{\mathcal{G}}$	Success set for the agent ${\mathcal A}$ and goal ${\mathcal G}$
	• •	Agent representation
\agRep	$oldsymbol{m}{\mathcal{M}}$	~ -
\agRepSp		Agent's model space
\agNuis	$egin{array}{c} \mathrm{G}_{\mathcal{A}} \ \mathrm{G}_{\mathcal{A}}^{orall} \ \mathrm{G}_{\mathcal{A}}^{orall} \ \mathrm{G}_{\mathcal{A}}^{\mathcal{U}} \ \mathrm{G}_{\mathcal{A}}^{\mathcal{U}} \ \end{array}$	
\agNuisComp	$G_{\mathcal{A}}^{\perp}$	Complement of $G_{\mathcal{A}}$.
\agNuis0bs	$G_{\mathcal{A}}^{\mathcal{A}}$	
\agNuisCmd	$\mathrm{G}_{\mathcal{A}}^{u}$	
\agbbClass	$C_{\mathcal{A}}$	
\agbbClCore	$C^0_{\mathcal{A}}$	
\agGoal	${\cal G}$	The agent's goal (a subset of StocProce
articles		
articles/bds	$BDS \ report$	
1556		
BDSnk	BDS(n;k)	
\BDSSk	$BDS(n;k) \ CBDS(\mathcal{S};k)$	
\BDSSk \bgBDSfamily	$BDS(n;k) \ CBDS(\mathcal{S};k) \ BDS$	Family of BDS sensors
\BDSSk \bgBDSfamily \bgCBDSfamily	$\begin{array}{c} BDS(n;k) \\ CBDS(\mathcal{S};k) \\ BDS \\ CBDS \end{array}$	Family of BDS sensors
\BDSSk \bgBDSfamily \bgCBDSfamily \bds	$BDS(n;k) \ CBDS(\mathcal{S};k) \ BDS$	
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS	$\begin{array}{c} BDS(n;k) \\ CBDS(\mathcal{S};k) \\ BDS \\ CBDS \end{array}$	Family of BDS sensors Bilinear dynamics system
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS	Family of BDS sensors
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS	Family of BDS sensors Bilinear dynamics system
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS BDS BDS BDS	Family of BDS sensors Bilinear dynamics system
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS BDS BDS BDS	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics sys
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS BDS BDS BDS	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \omsumb{,}	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS BDS BDS $CBDS$ BDS $CBDS$	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments)
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \omsumb{,}	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS BDS $CBDS$ $CBDS$ $CBDS$ $CBDS$ $CBDS$ $CBDS$	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \TT \TTe	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS $CBDS$ $CBDS$ $CBDS$ $CBDS$ $CBDS$	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \omsumb{,} \TT \TTe \TP	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS $CBDS$ $CBDS$ $CBDS$ $CBDS$	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ?
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \omsumb{,} \TT \TTe \TPe \TPe	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS $CBDS$ $CBDS$ $CBDS$ $CBDS$ $CBDS$ $CBDS$	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ? Learned tensor
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \omsumb{,} \TT \TTe \TP \TPe \TU \TUe	$BDS(n;k)$ $CBDS(\mathcal{S};k)$ BDS $CBDS$ BDS BDS BDS $CBDS$ $CBDS$ $CBDS$ $CBDS$ $CBDS$ $CBDS$ $CBDS$	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ? Learned tensor Learned tensor
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \TT \TTe \TP \TPe \TP \TPe \TU \TUe \TM	BDS(n; k) CBDS(S; k) BDS CBDS BDS BDS CBDS CBDS CBDS CBDS CB	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ? Learned tensor Learned tensor Bilinear tensor in BDS dynamics
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \omsumb{,} \TT \TTe \TP \TPe \TU \TUe \TM \TMe	BDS(n; k) CBDS(S; k) BDS CBDS BDS BDS CBDS CBDS CBDS CBDS U U U M M	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ? Learned tensor Learned tensor Bilinear tensor in BDS dynamics Bilinear tensor in BDS dynamics
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \cbds \CBDS \omsum\{\} \omsumb\{\} \TT \TTe \TTP \TPe \TPe \TU \TUe \TM \TMe \TM	BDS(n; k) CBDS(S; k) BDS CBDS BDS BDS CBDS CBDS CBDS CBDS U U U M M M N	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ? Learned tensor Learned tensor Bilinear tensor in BDS dynamics Bilinear tensor in BDS dynamics Bilinear tensor in BDS dynamics
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \cbds \CBDS \TT \TTe \TP \TPe \TP \TPe \TU \TUe \TM \TMe \TN \TNe	BDS(n; k) CBDS(S; k) BDS CBDS BDS BDS CBDS CBDS CBDS CBDS CB	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ? Learned tensor Learned tensor Bilinear tensor in BDS dynamics
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \cbds \CBDS \omsumb{,} \TT \TTe \TPe \TPe \TU \TUe \TM \TMe \TN \TNe \TCov	BDS(n; k) CBDS(S; k) BDS CBDS BDS BDS CBDS CBDS CBDS CBDS CB	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ? Learned tensor Learned tensor Bilinear tensor in BDS dynamics Covariance of y.
\BDSSk \bgBDSfamily \bgCBDSfamily \bds \BDS \cbds \CBDS \cbds \CBDS \omsumb{,} \TT \TTe \TP \TPe \TP \TPe \TU \TUe \TM \TMe \TN \TNe	BDS(n; k) CBDS(S; k) BDS CBDS BDS BDS CBDS CBDS CBDS CBDS CB	Family of BDS sensors Bilinear dynamics system Continuous-space bilinear dynamics system omitted sum omitted sum (two arguments) Learned tensor ? Learned tensor Learned tensor Bilinear tensor in BDS dynamics

\Tucove	Q	Covariance of \boldsymbol{y} .
\discInt	\overline{T}	Discretization interval
\nearavg	$\overline{\mu}$	Average nearness
articles/bgds	$BGDS\ report$	
\bgds	BGDS	Bilinear gradient dynamics system
\BGDS	BGDS	
\bgCmd	$oldsymbol{u}$	commands
\bgCmdH	$\boldsymbol{u}^{\mathbb{T}}$	commands history
\bgCmdSp	\mathcal{U}	commands space
\bgWorld	W	World
\bgWorldSp	${\mathcal W}$	World space
		$W \in \mathcal{D}(\mathbb{T}, \mathcal{U}, \mathcal{Y})$
		<pre>\$\bgWorld \in \bgRSSp(\bgTime, \bgCm \bgObsSp)\$</pre>
\bgAgent	agent	Agent
\bgAgentEx	agent learn	Agent exploration
\bgAgentAc	act	Agent exploration Agent action
, 0 0		Agent action Agent representation
\bgAgentRep	$rac{r}{\mathcal{R}}$	
\bgAgentRepSp		Agent representation space
\bgAgentSp	Agents	Agent action
\bgCmdTr	$oldsymbol{g}^{\mathcal{U}}$	Transformation of the commands
\bgCmdTrSp		
\bg0bsTr	h	Transformation of the observations
\bg0bsTrSp	G^{y}	
bgSamplingGroup	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	rankcode	Rank code
\bgRangeFamily	RF	Family of range-finders models
\bgFields	С	
\bgCmdConstraints	$\Omega_{m{u}}$	
bgPopK	ψ	
articles/bgds/old	$BGDS\ report$	
\state	x	Generic underlying state.
\stateSp	$\boldsymbol{\mathfrak{X}}$	Generic underlying state space.
\detecte	d	Detector
		Quantity with mean normalized.
dist	σ	Distance to obstacle
\distn	σ^*	Distance to obstacle, mean normalized
\rfnl	eta	Nonlinear function in range-finder tens
\near	$\overset{\sim}{\mu}$	Nearness
\lum	$\stackrel{ ho}{y}$	Luminance
\lumn	$\overset{g}{y^*}$	Luminance, mean normalized
\sptran	$\stackrel{g}{\ell}$	Sensor pose (translation)
\sprot	$\ell_{ heta}$	Sensor pose (rotation)
\slvel	$oldsymbol{v^s}$	Sensor linear velocity (when off axis)
		,
\savel	ω^s	Sensor angular velocity (when off axis)

\TX	X	Generic metric
TXe	X	Generic metric
\OS	\mathbf{S}	$S = s \times \nabla$
\convf	$\overset{\sim}{f_*}$	Indicates the convolution with a kernel
\my	m	Metric on the tangent space of $y(s)$.
$\langle ip{\dots} \rangle$	5.65.6	D U ADGDG
bgBGDSfamily	BGDS	Family of BGDS sensors
\BGDSsk	$BGDS(\mathcal{S};k)$	
\focal	F	Pinhole camera focal length.
\traindist	$p_{ m T}$	Training distribution.
trainsym	$Sym(p_{\mathrm{T}})$	Symmetry group of $p_{\rm T}$.
\	3 (1 1)	, , , , , , , , , , , , , , , , , , , ,
articles/bgds/logical	Gradient dynamics	
obslsp	2	Observation logical space
\obs1	\tilde{z}	Observations in logical space
obsle	z	Observation logical space element
xtos	φ	Mapping between S and Z .
\jac	J	Jacobian of φ
\jace	J	An element of the Jacobian of φ .
\mbox{mz}	μ	Metric on the tangent space of $z(x)$.
\mmu	M	Metric for the commands u .
articles/bgds/logical/grads	$Gradient\ dynamics$	
Tzgd	L	z gradient dynamics
\Tzgde	L	z gradient dynamics (element)
\Tzgl	_ M	z gradient learned tensor
–	M	z gradient learned tensor (element)
Tzgle		
Tzgcov	S	z gradient covariance
Tzgcove	<u>S</u>	z gradient covariance (element)
Tzad	E	Affine part of dynamics.
\Tzade	Е	Affine part of dynamics (element)
\Tzal	F	Learned affine part of dynamics.
\Tzale	F	Learned affine part of dynamics (eleme
articles/bgds/tensors	$BGDS \ report$	
Tygd	G	\boldsymbol{y} gradient dynamics
Tygde	G	\boldsymbol{y} gradient dynamics (element)
Tygl	Н	y gradient learned tensor
\Tygle	Н	y gradient learned tensor (element)
\Tygcov	R	$oldsymbol{y}$ gradient covariance
	R	\boldsymbol{y} gradient covariance \boldsymbol{y} gradient covariance (element)
\Tygcove		
Tyad	В	Affine part of dynamics.
Tyade	В	Affine part of dynamics (element)
Tyal	C	Learned affine part of dynamics.
\Tyale	С	Learned affine part of dynamics (eleme
	- 0	
articles/bgds/models/deprecated	Definition of rando	
\bgTime	${\mathbb T}$	Time axis
\bgRS	D	Random model
bgRSSp	$\mathfrak D$	All models
\bgRSinput	a	Input signal
		• •

bgRSinputSp	${\mathcal A}$	
bgRSinputH	$\boldsymbol{a}^{\mathbb{T}}$	History of input signal
bgRSoutput	b	v 1
\bgRSoutputH	$\boldsymbol{b}^{\mathbb{T}}$	History of output signal
bgRSoutputSp	${\mathfrak B}$	
\bgRSinputTr	\overline{g}	
\bgRSinputTrSp	$\mathrm{G}^{\mathcal{A}}$	
\bgRSoutputTr	$\overset{\circ}{h}$	
\bgRSoutputTrSp	$\mathrm{G}^{\mathfrak{B}}$	
\bgObs	η	observations
\bg0bsH	$\overset{oldsymbol{g}}{oldsymbol{y}}^{\mathbb{T}}$	observations history
\bg0bsSp	y	observation space
articles/camera	Camera paper	
rank	order	
\place	place	
\ff	f	Distance to similarity function
Sany	$\stackrel{j}{\mathcal{M}}$	Generic hypersphere
\targetSp	\mathfrak{M}	Target manifold
Ssubset	M	A subset of M XXX
infr	infr	Informative radius
\fir	$\inf(f)$	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		Procrustes score
\eirproc \isoError	$e_{ m pr}$	1 foctustes score
\symError	e_{iso}	
\relError	e_{sym}	
\relError \scaledRelError	e_{r}	
`	e_{sr}	
angcorr	$ ho_{ heta}$	Spearman performance measure
spearperf	$ ho_{ m sp}$	Spearman performance measure
spearperfn	$ ho_{ m sp}^*$	Normalized Spearman performance me
dirset	8	Set of directions
dirmat	S	Directions stacked in a matrix
\matX	X	
\matI	I	
\arot	X	
cosmat	C	
cosmatij	\mathbf{C}_{ij}	
distmat	D	
distmatij	\mathbf{D}_{ij}	
simmat	Y	Similarity matrix
simmatij	${ m Y}_{ij}$	
simmatii	${ m Y}_{ii}$	
	Y_{kl}	
simmatkl		
\algorparam	γ	
\algorparam \shannon	H	
\algorparam		field of view Shepard-Kruscall algorithm

\SBSEw	SKv + w	An extension to the SK algorithm
\SBSE	SKv	An extension to the SK algorithm (wi
articles/dds	$DDS\ report$	
ddsres	ρ	Resolution of the sensor in a DDS.
\ddsarea	$ \mathcal{S} $	Area of the manifold \mathcal{S} .
ddsbound	$d_{ m max}$	Bound on the maximum diffeomorphis
DDS	DDS	
\dds	DDS	
ddsl	DDSL	
DDSsu	$DDS(\mathcal{S};\mathcal{U})$	
DDSLsvu	$DDSL(\mathcal{S},\mathcal{V};\mathcal{U})$	
bgDDSfamily	DDS	
bgDDSLfamily	DDSL	
\diffeoURL	888	Model
\cmdAlphabet	$\mathfrak U$	
\ncmdwords	$ \mathcal{U} $	Number of commands words.
\obsspD	$d^{\mathcal{S}^{'}}$	Metric on S .
\diffId	$Id_\mathcal{S}$	Identity diffeomorphisms.
\diffU	Γ	Uncertainty of estimated diffeomorphi
\diffDist	d^{Diff}	Distance between two diffeomorphism
\cmdDist	$\overset{\circ}{\mathcal{D}_{\mathrm{cmd}}}$	Distance between two commands.
\cmdADist	$\mathcal{A}_{ ext{cmd}}$	Anti-distance between two commands.
\images	$\mathbb{F}(\mathcal{S})$	
\obspsV	\mathcal{V}	viewport
\ddsfov	Ÿ	viewport
\obspsVunpred	$\gamma_{\overline{ m pr}}$	undpredictable part
\obspsVpred	$\gamma_{ m pr}$	predictable part
\obspsVunpredt	${oldsymbol{\mathcal{V}}_{t}^{\overline{ ext{pr}}}}$	undpredictable part at time t
\obspsVmpredt \obspsVpredt	$rac{{f v}_t}{{f v}_t^{ m pr}}$	predictable part at time t
\ddsctod		predictable part at time t
	C_TO_DIFF	State of a DDS (alament)
ddsste	x	State of a DDS (element)
\ddsst	x	State of a DDS
articles/deepdyn	Learning of latent,	/deep dynamics
\ldmap	γ	Map from latent state to instantaneou
hclass	${\cal H}$	Hidden class
iclass	\mathcal{M}	Instantnaeous class
articles/despl	Parallel learning p	paper
		· F · · ·
\desplStats	Stats	
\desplIStats	IStats	
\desplData	Data	
\desplIData	IData	
\desplibate \desplModels	Models	
\despinodels \desplIModels	IModels	
\desplimodels \despllearn	learn	
\despliearn \desplilearn	ilearn	
, -	filter	
\desplfilter	Tilter	

\desplfmodel	fm	
desplistats	istats	
desplglue	glue	
desplmglue	mglue	
desplstats	stats	
desplmerge	merge	
\desplInter	I	Interval
\patternA	Slice-Stats-M	
\patternB	Split-Stats-Gl	
\patternC	Filter-Learn-c	
\patternD	Recursive-Learn	
\proto	A2	
\slicelen	slicelen	
\njobslearn		
, ,	$n_{ m learn}$	
\njobsmerge	$n_{ m merge}$	
\njobstotal	$n_{ m jobs}$	
articles/compmake	Compmake	
Compmake	Compmake	
\parmake	parmake	
\sgemake	sgemake	
articles/dptr1	Technical report fo	ar diffeonlanning
articles/aptri	1есппісаї тероті јо	т аңуеориантид
articles/dptr1/spaces	spaces	
SetImages	Im	
SetUImages	Ulm	
\genericdist{,}		
\genericudist{,}		
obsstart	$oldsymbol{y}_{ ext{start}}$	
obsgoal	$oldsymbol{y}_{\circ}$	
, ,		
\SetPlans	Plans	
\SetPlans	Plans Plans	
\planSp	Plans	reduced plans
\planSp \redplans	Plans RedPlans	reduced plans
\planSp \redplans \plan	$\begin{array}{c} Plans \\ RedPlans \\ p \end{array}$	a generic plan
\planSp \redplans \plan \plang	Plans RedPlans p p_{\circ}	a generic plan true plan
\planSp \redplans \plan \plang \planf	$\begin{array}{c} Plans \\ RedPlans \\ p \\ p_{\circ} \\ p^{\star} \end{array}$	a generic plan
\planSp \redplans \plan \plang \planf \zeroplan	$\begin{array}{c} Plans \\ RedPlans \\ p \\ p_{\circ} \\ p^{\star} \\ \emptyset \end{array}$	a generic plan true plan The solution found
\planSp \redplans \plan \plang \planf \zeroplan \obsu	$\begin{array}{c} Plans \\ RedPlans \\ p \\ p_{\circ} \\ p^{\star} \\ \emptyset \\ \pmb{z} \end{array}$	a generic plan true plan The solution found Scalar uncertainty
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue	$\begin{array}{c} Plans \\ RedPlans \\ p \\ p_{\circ} \\ p^{\star} \\ \emptyset \\ \boldsymbol{z} \\ z \end{array}$	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea \dd	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s Generic diffeomorphisms
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea \dd \dde	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A φ	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s Generic diffeomorphisms Generic diffeomorphisms
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea \dd \dde \dde	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A φ φ	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s Generic diffeomorphisms Generic diffeomorphisms its uncertaint
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea \dd \dde \dde	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A φ φ γ	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s Generic diffeomorphisms Generic diffeomorphisms
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea \dd \dde	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A φ φ	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s Generic diffeomorphisms Generic diffeomorphisms its uncertaint
<pre>\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea \dd \dde \dde \ddu \ddue \uddiffSp</pre>	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A φ φ γ	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s Generic diffeomorphisms Generic diffeomorphisms its uncertaint
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea \dd \dde \dde	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A φ φ γ γ UDiff	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s Generic diffeomorphisms Generic diffeomorphisms its uncertaint
\planSp \redplans \plan \plang \planf \zeroplan \obsu \obsue \sarea \dd \dde \dde \ddu \ddue \uddiffSp articles/dptr1/structure	Plans RedPlans p p_{\circ} p^{\star} \emptyset z z A φ φ γ γ UDiff $Diffeo\ structure$	a generic plan true plan The solution found Scalar uncertainty Scalar uncertainty area around pixel s Generic diffeomorphisms Generic diffeomorphisms its uncertaint

articles/dptr1/simplification	$plan\ reduce$	
plantodiff	p_to_d	
\ptod	p_to_d	
\pd	p_to_d	
\planreduce	PlanReduce	
noutoforder	noutoforder	TODO
1		
articles/dptr1/distances	Distances	
dDiffLone	$\begin{matrix} \frac{d_{L_1}^{Diff(\mathcal{S})}}{d_{L_1}^{UDiff(\mathcal{S})}} \\ \frac{d}{d_{\mathcal{S}}^{S}} \end{matrix}$	
dUDiffLone	$\overline{d}_{T}^{UDiff(\mathcal{S})}$	
dobsps	$d^{\mathcal{S}^1}$	
\dImLone	d^{lm}	
dImLtwo	$d_{L_1}^{ m lm} \ d_{L_2}^{ m lm}$	
\dIm\{\ldots\}	$^{\omega}L_{2}$	
$\operatorname{dIm}\{\ldots\}$		
(cmdOrd	\prec	
	~	
	GNB	
bnbc	BNB	
bngc	BNG	
bntc	BNT	
\gebc	GEB	
/gebc /bebc	BEB	
· ·	BEG	
begc	BET	
betc	m BET c	
plansarea	$P_{ m near}$	
\algocover	r near COVEr	
\algorianreduce	planreduce	
\algobidirectional	bidirectional-search	
dubinsys	Dubin'scar	
orbitsys	Orbit camera	
markit{}	Oroncamera	
markA	†	
markB		
markC	‡ §	
distthres	$\overset{\circ}{c}$	
btrue	true	
bfalse	false	
botherwise	otherwise	
cmdleft	u_{left}	
cmdright	$oldsymbol{u_{right}}$	
/cmdup	$oldsymbol{u_{top}}$	
\cmddown	$oldsymbol{u_{down}}$	
\imvis	vis	Visibility
minvis	v_0	v
maxdis	d_g	goal threshold
1	g	3

\impred \plA	pred $RLrl$	Image prediction
articles/neucontrol	neuromorphic con	
		Clip up to some boundary
\maxu	b	
\clipu	sat_b	
\gain	κ	
\settime	${\mathbb T}$	
controllerLast	C1	Uses last event
controllerTI	C2	Time integrale
\controllerTS	C3	time smoothed
\controllerTN	C4	Time neural
articles/optcam	$optimal\ sensor$	
\ds	Δ_s	Spatial sampling
\dt	Δ_t	Temporal sampling
\db	Δ_b	Brightness threshold
dvsth	Δ_b	Threshold
camexp	$\mathbf{E}\mathbf{X}$	Exposure
mseps	$\mathrm{MSE}_{\mathrm{ps}}$	periodic sampling
mseeb	$ ext{MSE}_{ ext{eb}}$	MSE event based
bwps	$\mathrm{BW}_{\mathrm{ps}}$	bandwidth periodic sampling
\bweb	$\mathrm{BW}_\mathrm{eb}^\mathrm{F^2}$	bandwidth event based
\ori	α	
articles/estgroups	Estimation with s	symmetries
articles/estgroups/state	Estimation with s	
		State
articles/estgroups/state	$State \ oldsymbol{x} \ n$	
articles/estgroups/state \esSt	$State \ oldsymbol{x} \ n \ \chi$	State Dimension of state space State space
articles/estgroups/state \esSt \esStDim	$State \ oldsymbol{x} \ n$	State Dimension of state space
articles/estgroups/state \esSt \esStDim \esStSp	$State \ oldsymbol{x} \ n \ \chi$	State Dimension of state space State space Prior for state
articles/estgroups/state \esSt \esStDim \esStSp \esStDist	$egin{array}{c} State \ oldsymbol{x} \ n \ oldsymbol{\chi} \ \mu_{oldsymbol{x}}^{\chi} \end{array}$	State Dimension of state space State space
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations	$State$ $oldsymbol{x}$ n χ $\mu^{\chi}_{oldsymbol{x}}$ $Observations$	State Dimension of state space State space Prior for state
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs	$State$ $oldsymbol{x}$ n χ $\mu^{\chi}_{oldsymbol{x}}$ $Observations$ $oldsymbol{y}$	State Dimension of state space State space Prior for state Observations
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim	$State$ $oldsymbol{x}$ n χ $\mu^{\chi}_{oldsymbol{x}}$ $Observations$ $oldsymbol{y}$ m	State Dimension of state space State space Prior for state Observations Observations dimensions
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp	$State$ $oldsymbol{x}$ n χ $\mu^{\chi}_{oldsymbol{x}}$ $Observations$ $oldsymbol{y}$ m \mathfrak{Y}	State Dimension of state space State space Prior for state Observations Observations dimensions Observations space
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp	$State$ $oldsymbol{x}$ n χ $\mu^{\chi}_{oldsymbol{x}}$ $Observations$ $oldsymbol{y}$ m \mathfrak{Y}	State Dimension of state space State space Prior for state Observations Observations dimensions Observations space Observation map
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp	$State$ $oldsymbol{x}$ n χ $\mu^{\chi}_{oldsymbol{x}}$ $Observations$ $oldsymbol{y}$ m \mathfrak{Y}	State Dimension of state space State space State space Prior for state Observations Observations dimensions Observations space Observation map $y = nh(x)$
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp \esObsMap	$State$ $oldsymbol{x}$ n χ $\mu_{oldsymbol{x}}^{\chi}$ $Observations$ $oldsymbol{y}$ m $oldsymbol{y}$ h	State Dimension of state space State space State space Prior for state Observations Observations dimensions Observations space Observation map $y = nh(x)$
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp \esObsMap articles/estgroups/nuisances	$State$ $oldsymbol{x}$ n χ $\mu_{oldsymbol{x}}^{\chi}$ $Observations$ $oldsymbol{y}$ m y h $Nuisances$ $oldsymbol{n}$ N	State Dimension of state space State space Prior for state Observations Observations dimensions Observations space Observation map $y = nh(x)$ $ $
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp \esObsMap articles/estgroups/nuisances \esNuis	$State$ $oldsymbol{x}$ n χ $\mu_{oldsymbol{x}}^{\chi}$ $Observations$ $oldsymbol{y}$ m $oldsymbol{y}$ h	State Dimension of state space State space Prior for state Observations Observations dimensions Observations space Observation map $y = nh(x)$ $ $
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp \esObsMap articles/estgroups/nuisances \esNuis \esNuis \esNuisSp	$State$ $oldsymbol{x}$ n χ $\mu_{oldsymbol{x}}^{\chi}$ $Observations$ $oldsymbol{y}$ m $oldsymbol{y}$ h $Nuisances$ $oldsymbol{n}$ N $\mu_{oldsymbol{n}}^{N}$	State Dimension of state space State space Prior for state Observations Observations dimensions Observations space Observation map $y = nh(x)$ $ $
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp \esObsMap articles/estgroups/nuisances \esNuis \esNuisSp \esNuisDist	$State$ $oldsymbol{x}$ n χ $\mu_{oldsymbol{x}}^{\chi}$ $Observations$ $oldsymbol{y}$ m $oldsymbol{y}$ h $Nuisances$ $oldsymbol{n}$ N $\mu_{oldsymbol{n}}^{N}$	State Dimension of state space State space Prior for state Observations Observations dimensions Observations space Observation map $y = nh(x)$ $ v = nh(x) $ $ v = nh(x) $ $ v = nh(x) $ Nuisance Nuisance Nuisance group Nuisance distribution
articles/estgroups/state \esSt \esStDim \esStSp \esStDist articles/estgroups/observations \esObs \esObsDim \esObsSp \esObsMap articles/estgroups/nuisances \esNuis \esNuisSp \esNuisDist articles/estgroups/estimators	$State$ $oldsymbol{x}$ n χ $\mu_{oldsymbol{x}}^{\chi}$ $Observations$ $oldsymbol{y}$ m y h h $Nuisances$ $oldsymbol{n}$ N $\mu_{oldsymbol{n}}^{N}$ $Estimators,\ risks$	State Dimension of state space State space Prior for state Observations Observations dimensions Observation space Observation map $y = nh(x)$ $ $ esObs = esNuis esObsMap(esSt) $ Nuisance Nuisance Nuisance group Nuisance distribution and performances

\esRisk	e	Risk function
\esRiskSp	3	Risk space
		Risk distribution for given estimator
\esRiskDistPO	\preceq	Partial order defining preference on d
\\esProb	$\overset{\preceq}{\mathcal{P}}$	Estimation problem
articles/estgroups/symmetries	Symmetries in the	$e\ problem$
\esStAb	α	Abstract state
\esStAbSp	${\mathcal A}$	Abstract space
\esRep	arphi	Representation
	•	$\varphi : x \mapsto \alpha.$
		<pre>\$\esRep: \esSt \mapsto \esStAb\$.</pre>
\esStSym	A	Group of symmetries of the state
\esObsSym	В	Group of symmetries of the observation
\esRiskSym	C	Group of symmetries of the risk function
\esPOSym	D	Group of symmetries acting on the pa
\esProbSym	${\mathcal S}$	Tuple of symmetries
articles/groupspectral	Group spectral pre	operties
\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
gsSym	$\widetilde{\mathrm{Sym}}$	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	~	Unstructured symbol.
\ \jokFunc	*	Joker function
\zerFunc	0	Zero function
articles/groupspectral/defs	Group spectral pro	operties
\gsdContravariant	$\stackrel{-1}{\longrightarrow}$	Contravariance
	0 (Invariance
\gsdInvariant	—→ Id	
\gsdEquivariant	_ 	Equivariance
\gsdIntroduces	*	Nuisance introduced
gsdUnstructured	$\overset{\sim}{\longrightarrow}$	Unstructured result
articles/invariances	Invariances	
		Dual of a representation nuisance
\brel	\leq_B	Simulation partial order
bsim	\sim_B	Simulation relation
articles/jbds	$Symbols\ introduce$	d in JBDS
\veh	B	A vehicle body

\vehBody	B	A vehicle body
\vehKin	K	Vehicle kinematics
vehSensPos	$m{r}$	Sensor relative pose
vehSensFun	ψ	Function that defines an exteroceptive
\env	$\stackrel{'}{e}$	Environment
\envSp	\mathcal{E}	Environment space
\envo	\mathcal{O}	Obstacles in the environment
\envt	\mathcal{T}	Texture (function on $\partial \mathcal{O}$)
\envf	\mathcal{F}	Field sensed by field sampler
\envi	$\partial \mathcal{O}$	Obstacles boundaries
,	$\mathcal{S}^{ ext{dif}}$	Obstacies boundaries
\obspsDiff	$\mathcal{S}^{\overline{ ext{dif}}}$	
\obspsNotDiff	_	
\sic	$\overset{\text{VS}}{-}$	ideal camera
\sir	RF	ideal range finder
\sif	FS	ideal field sampler
\sicV	$\mathrm{VS}(\mathcal{V})$	ideal camera with viewport
\sirV	$ ext{RF}(\mathcal{V})$	ideal range finder with viewport
\sifV	$\mathrm{FS}(\mathcal{V})^{'}$	ideal field sampler with viewport
	- (')	Zero order hold
(
articles/jbds/misc	Used in proofs for	or JBDS
\ygneig	N	A neighborhood of y_{\circ} .
// 5	- ·	12 101810
articles/jbds/robots		
\allrobots	Robots	The set of all robots
\vehRob	ISV	Idealized Simple Vehicles
\vehRobNuis	IŠV	Vehicle robots with nuisances
,	ISV	venicie robots with nuisances
\robVeh	13 V	
articles/optbody	Ontimal design	of body and mind
MA	A	of voay and mind
\MB	A B	
,		
\MC	C	
\MG	G	
\MH	H	
ML	${f L}$	
\MQ	${f Q}$	
\MP	P	
MS	${f s}$	
MSigma	$oldsymbol{\Sigma}$	
\MV	\mathbf{V}	
\MW	\mathbf{W}	
\SP	$P_{ m s}$	Sensing power
\AP	$\stackrel{r_{ m s}}{P_{ m a}}$	Actuation power
\SE	$\stackrel{r_{\mathbf{a}}}{E}$	Stored energy
,		
\ER	r	Trajectory efficiency ratio
\HP	Θ	Heading precision
\np	n	Number of pixels
		~
articles/soattotheory	Symbols used by	
\scene	ξ	scene

representation	$\hat{\xi}$ $\hat{\xi}^{\vee}$ ϕ ϕ^{\wedge}	representation
minrep	$\hat{\hat{\xi}}^{\vee}$	minimal representation
feature	$\overset{\circ}{\phi}$	feature
maxinv	ϕ^{\wedge}	maximal invariant feature
suffstat	$\overset{\tau}{\phi}{}^{\vee}$	maximal invariant feature
image	$\stackrel{^{}}{\mathcal{I}}$	image
addnoise	$\frac{1}{n}$	additive noise
imageform	\tilde{h}	image formation function
\groupnuis	g	nuisance which have the structure of
othernuis	u	other non-invertible nuisance
lightfield	\mathcal{L}	all possible images generated by a sce
complex	$\overset{ au}{H}$	Complexity measure
actinfo	\mathcal{H}	Actionable information
covdet	ψ	Covariant detector
Covaer	ψ	Covariant detector
articles/soattotheory/mseerep	$msee\ report$	
$_{ ext{nuddisc}}\{\dots\}$		Domain sampling operator (subset)
$_{ ext{nusample}}\{\dots\}$		Domain sampling operator (subset)
$\mathtt{nuvdisc}\{\ldots\}$		Value Discretization operator (subset
$nusmooth{\{\ldots\}}$		Smoothing operator (kernel)
$nucens{}$		Censoring operator (field of view)
nuoccl{}		Occlsions
imform	I	
contrast	f	
,	Ţ	
articles/thesis	Special symbols for t	
labelrefinement	ref	Indicates a refinement
\pchomeoR	$PieceHomeo(\mathbb{R})$	
dianode{}		used in properties 1.dot
$dianodem{}$	_	
hitZ		
bitO	ldot	
1		
infbinstrings	$\{\Box, \boxdot\}^{\mathbb{N}}$	Set of infinite binary strings
infbinstrings chineseClose	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary)	Set of infinite binary strings The Chinese character corresponding
infbinstrings chineseClose twosignals	$\{\Box, \boxdot\}^{\mathbb{N}} \ ext{(nosummary)} \ y^i, y^j$	
infbinstrings chineseClose twosignals twosignalsa	$\{\Box, \boxdot\}^{\mathbb{N}} \ ext{(nosummary)} \ y^i, y^j \ y^i$	
infbinstrings chineseClose twosignals twosignalsa twosignalsb	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j	
infbinstrings chineseClose twosignals twosignalsa	$\{\Box, \boxdot\}^{\mathbb{N}} \ ext{(nosummary)} \ y^i, y^j \ y^i$	
infbinstrings chineseClose twosignals twosignalsa twosignalsb twosignalscolon	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j	The Chinese character corresponding Order of a generic semantic relations
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j $y^i; y^j$	The Chinese character corresponding
infbinstrings chineseClose twosignals twosignalsa twosignalsb	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j y^j $y^i; y^j$ m	The Chinese character corresponding Order of a generic semantic relations
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder infinit genericsemrel	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j y^j $y^i; y^j$ m d	The Chinese character corresponding Order of a generic semantic relations Infinitesimal
infbinstrings chineseClose twosignals twosignalsa twosignalsb twosignalscolon semrelorder infinit genericsemrel gensemrelsym	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j $y^i; y^j$ m d \mathcal{R}	The Chinese character corresponding Order of a generic semantic relations Infinitesimal A generic semantic relation.
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder infinit	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j $y^i; y^j$ m d \mathcal{R} $\operatorname{Sym}(\mathcal{R})$	Order of a generic semantic relations Infinitesimal A generic semantic relation. Symmetries of the semantic relation
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder infinit genericsemrel gensemrelsym genericsimilarity	$\{\Box, \boxdot\}^{\mathbb{N}}$ $(\operatorname{nosummary})$ y^{i}, y^{j} y^{i} y^{j} $y^{i}; y^{j}$ m d \mathcal{R} $\operatorname{Sym}(\mathcal{R})$ R	Order of a generic semantic relations Infinitesimal A generic semantic relation. Symmetries of the semantic relation A generic similarity measure. CDF of one sensel
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder infinit genericsemrel gensemrelsym genericsimilarity obsecdf cmdreverse	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j $y^i; y^j$ m d \mathcal{R} $Sym(\mathcal{R})$ R	Order of a generic semantic relations Infinitesimal A generic semantic relation. Symmetries of the semantic relation A generic similarity measure. CDF of one sensel The map from a command to its reve
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder infinit genericsemrel gensemrelsym genericsimilarity obsecdf cmdreverse cmdopt	$\{\Box, \boxdot\}^{\mathbb{N}}$ $(\operatorname{nosummary})$ y^{i}, y^{j} y^{i} y^{j} $y^{i}; y^{j}$ m d \mathcal{R} $\operatorname{Sym}(\mathcal{R})$ R c ρ $oldsymbol{u}^{\star}$	Order of a generic semantic relations Infinitesimal A generic semantic relation. Symmetries of the semantic relation A generic similarity measure. CDF of one sensel The map from a command to its revertible.
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder infinit genericsemrel gensemrelsym genericsimilarity obsecdf cmdreverse cmdopt cmdnop	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j $y^i; y^j$ m d \mathcal{R} Sym (\mathcal{R}) R c ρ u^* u^{nop}	Order of a generic semantic relations Infinitesimal A generic semantic relation. Symmetries of the semantic relation A generic similarity measure. CDF of one sensel The map from a command to its reverse optimal command Command corresponding to "resting"
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder infinit genericsemrel gensemrelsym genericsimilarity obsecdf cmdreverse cmdopt cmdnop grew	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j $y^i; y^j$ m d \mathcal{R} Sym(\mathcal{R}) R c ρ $oldsymbol{u}^{\star}$ $oldsymbol{u}^{nop}$ R	Order of a generic semantic relations Infinitesimal A generic semantic relation. Symmetries of the semantic relation A generic similarity measure. CDF of one sensel The map from a command to its revertible.
infbinstrings chineseClose twosignals twosignalsa twosignalscolon semrelorder infinit genericsemrel gensemrelsym genericsimilarity obsecdf cmdreverse cmdopt cmdnop	$\{\Box, \boxdot\}^{\mathbb{N}}$ (nosummary) y^i, y^j y^i y^j $y^i; y^j$ m d \mathcal{R} Sym (\mathcal{R}) R c ρ u^* u^{nop}	Order of a generic semantic relations Infinitesimal A generic semantic relation. Symmetries of the semantic relation A generic similarity measure. CDF of one sensel The map from a command to its reverthe optimal command Command corresponding to "resting"

articles/thesis/longexample	Long example
\CalibA	CalibA
\CalibB	CalibB
Smoothkernel	k
Smooth	$Smooth_k$
\BGDSAg	BGDSagent
\BGDSAgS	BGDSagentS
\DImagesU	$\mathcal{D}(Im(\mathcal{S});\mathcal{U})$
\DImagesR	$\mathcal{D}(Im(\mathcal{S}); \mathbb{R}^{n_{oldsymbol{u}}})$
\ABehavior	behavior
\DImagesSphU	$\mathcal{D}(Im(\mathbb{S}^2);\mathcal{U})$
hobs	x
hobse	x
bound	M
board	111
common	Common symbols to all papers
common/abbreviations	Other abbrevations
\setA	\mathcal{A}
\setB	B
\setC	C
\setU	u
\setM	\mathfrak{M}
\setY	y
\setX	$\overset{\circ}{\mathfrak{X}}$
\setZ	2
\setS	§
\grG	G
\grH	H
\grK	K
\grN	N
192.1	
common/abbreviations/invariances/abbreviations	
\sqa	a
\sqae	
\sqb	b
sqbe	b
\sqc	c
\sqce	c
common/acronyms	Acronyms
common/algebra	Algebra
ones	1
\idMat	I Identity matrix
matTrace	Trace of a matrix.
angleFun	∠ Angle function
\flatten	vec Matrix-to-vector rearrangement.
common/basic	Basic stuff

\setfun	\Rightarrow	Symbol for set functions (one-to-many
\algfield	field	Field.
		$field(\mathfrak{X}, +, \times)$ is an algebraic field.
		<pre>\$\algfield(\aset{X},+,\times)\$ is an</pre>
		field.
\wellorder	wellorder	A well ordered set.
		wellorder(\mathfrak{X}, \leq) is a well-ordered set.
		<pre>\$\wellorder(\aset{X},\leq)\$ is a we</pre>
		set.
\orderedfield	orderedfield	A well ordered field.
		orderedfield($\mathfrak{X},+,\times,\leq$) is a well-order
		$\c \c \$
		well-ordered field.
\powerset	powerset	Power set of a space
\supp	supp	Support of a set
\idFunc	Id	The identity function
\invFunc	1	Inverse function
\funcComp	0	Function composition
\emptysequence	Ø	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 s
	33	Continuous(A) are all continuous func
		\$\contFuncs(\setA)\$ are all continu
		on \$\setA\$.
\differFuncs	Differentiable	Differentiable functions
\partitions	partitions	Differentiable functions
\mExp	•	Matrix exponential
\big0	mexp ${\cal O}$	Big-O notation
\smallo		Dig-O notation
	O	
\definedas	<u> </u>	
1		anaga nna duat
\crossprod	× Di	cross-product
\gsDom	Domain	
\gsCod	Codomain	
\interCC{,}		
\interCO{,}		
\interOC{,}		
$\int \int \int dx dx$		
	[0 4]	
\unitInterval	[0,1]	
\unitInterval common/basic/logic	$egin{aligned} [0,1] \ & Logic \end{aligned}$	
\unitInterval common/basic/logic \logicAnd		Logic "and"
\unitInterval common/basic/logic	Logic	Logic "and" Logic "or" 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}^+_ullet	Non negative reals
\posReals	\mathbb{R}^+_{\circ}	Strictly positive reals
\nzReals	\mathbb{R}_{\circ}	Nonzero reals
American V & Contract for	240	110111010 10011
common/blackboxes	$Black\ boxes$	
$\abb{\dots}$		A black box
\bbD	D	
		Inverse of a black box
ackslash		left inverse of a black box
		right inverse of a black box
\alloutcomes	AllOutcomes	
alloutputs	AllOutputs	All outputs of a given system
bbDelay	Δ	The one-step delay system.
\vertblock	ı	1 ,
bbAccum	III	Accumulator system
\inLoop	Loop	Closes the loop around a system
\idSys	IdSys	The identity system
\bbSp	D	Set of black boxes
/2221	2	$\mathcal{D}(\mathfrak{X}; \mathfrak{Y})$ are all the black boxes from \mathfrak{X}
		\$\bbSp(\setX;\setY)\$ are all the bla
		from \$\setX\$ to \$\setY\$.
\bbFM	\mathfrak{D}_{fm}	Systems with finite memory
\bbSpInv	\mathcal{D}^{fm} \mathcal{D}^{\star}	Set of invertible systems
\bbSpinv \bbFMinv		ů .
,	\mathcal{D}_{fm}^{\star}	Systems with finite memory and invert
\bbSpIns	$\mathcal{D}_{ ext{inst}}$	Set of instantaneous systems
\bbSpDet	$\mathcal{D}_{ ext{det}}$	Deterministic systems
\bbSpInvIns	$\mathcal{D}^{\star}_{\mathrm{inst}}$	Set of invertible and instantaneous syst
		$\mathcal{D}^*(\mathcal{A})$ is a subset of $\mathcal{D}(\mathcal{A};\mathcal{A})$
		<pre>\$\bbSpInv(\setA)\$ is a subset of</pre>
\.	C 00	<pre>\${\bbSp(\setA;\setA)}\$</pre>
\bbSpCore	\mathcal{D}°	Systems up to representation
/17 11 / 11		
common/blackboxes/abbreviations	D^{-1}	
\bbDinv		
\bbDri	$oldsymbol{D}_{_{I}}^{R}$	
\bbDli	\boldsymbol{D}^L	
\bbE	$oldsymbol{E}$	
\bbF	$oldsymbol{F}$	
\bbG	$oldsymbol{G}$	
\bbH	H	
\bbL	$oldsymbol{L}$	
\bbSpBA	$\mathfrak{D}(\mathfrak{B};\mathcal{A})$	to write
bbSpAB	$\mathcal{D}(\mathcal{A};\mathcal{B})$	to write
common/blackboxes/deprecated	Deprecated	

\bb0p	\oplus	Composition operation
\inSeries	Series	Series of two systems
\bbSpAny	\mathfrak{D}_*	Any of the following
		Discrete time
\bbSpCT	$\mathcal{D}^{\mathbf{c}}$	Continuous time
\bbSpEB	$\mathcal{D}^{\mathbf{e}}$	Event-based
1		
common/boot	Bootstrapping symbols	
common/boot/obscmd	Observations and comm	*****
\world	m	The "world", an element of $\mathcal{D}(\mathcal{Y};\mathcal{U})$.
obs	$oldsymbol{y}$	Observations vector.
obse	y	Observations element.
cmd	$oldsymbol{u}$	Commands vector.
cmde	u	Commands element.
nobs	$n_{m{y}}$	Number of sensels
ncmd	$n_{m{u}}$	Number of actuators
\obsSp	y	Observation space
\cmdSp	ů	Commands space
\cmdSph	$\frac{\overline{u}}{\overline{u}}$	Domain of a single actuator $\mathcal{U} = \overline{\mathcal{U}}^{n_u}$.
• -	$\frac{\alpha}{y}$	Domain of a single sensel $\mathcal{Y} = \overline{\mathcal{Y}}^{n_y}$.
\obsSph		
obsSphd	$d^{\overline{y}}$	Metric on $d^{\overline{y}}$
\obsSpd	$d^{\mathcal{Y}}$	Metric on $d^{\mathcal{Y}}$
common/boot/spatialsensors	$Spatial\ sensors$	
obssp	S	Observation physical space.
obsps	${\mathcal S}$	Observation physical space.
genimages	lm	Images on physical space S .
\imps	$Im(\mathcal{S})$	Images on physical space S .
common/boot/servo	Servoing	
obsgmark	0	
obsg		Goal observations.
\obsge	$oldsymbol{y}_{\circ}$	Goal observations (element).
\obsgl	y_{\circ}	Goal observations (element).
\obsgle	$oldsymbol{z}_{\circ}$	Goal observations (element).
Oppgie	$z_{ m o}$	Goar observations (element).
common/boot/abbreviations	Abbreviations	
\bbSpYU	$\mathcal{D}(\mathcal{Y};\mathcal{U})$	to write
bbSpYXU	$\mathcal{D}(\mathcal{Y}; \mathfrak{X}; \mathcal{U})$	to write
\bbSpUY	$\mathcal{D}(\mathcal{U};\mathcal{Y})$	to write
\bbSpInvY	$\mathcal{D}^{\star}(\mathcal{Y})$	Representation nuisances on command
\bbSpInvU	$\mathcal{D}^{\star}(\mathcal{U})$	Representation nuisances on observation
\bbSpInvYU	$\mathcal{D}^{\star}(\mathcal{Y};\mathcal{U})$	Representation nuisances
\bbSpInvUY	$\mathcal{D}^{\star}(\mathcal{U};\mathcal{Y})$	1
\bbSpCoreYU	$\mathcal{D}^{\circ}(\mathcal{Y};\mathcal{U})$	Systems up to representation
common/vehicles	The Vehicles universe	
	Environments	All Vehicles environments
\veEnvironments		
\veSensors	Sensors	all Vehicles sensors

\veDynamics \veVehicles	Dynamics Vehicles	all Vehicles dynamics
common/vehicles/mah	todo	
\veSce	S	
\veVeh	V	
\veMov	M	
\veAdd	Α	
\veJoi	J	
\vePar	Р	Parallel composition of sensors
\veNcmd	U	·
\veNobs	Υ	
common/expressions	Miscellaneous expression	ons
\etal	et al.	
eg	e.g.,	
\etc	etc.	
\ie	i.e.,	
viceversa	viceversa	
vs	vs	Versus
\adhoc	adhoc	
apriori	apriori	
common/goodformulas	Better formulas annote	
		Explanation in formulas
$\left\{ \text{highA}\left\{ \ldots \right\} \right\}$		Highlight something in formulas (obser
$\highB\{\ldots\}$		Highlight something in formulas (comm
$\highC\{\ldots\}$		both observations and commands
common/yesorno	$Miscellaneous\ function$	s for document formatting
\ns	,	
\tickYes	<u>~</u>	
\tickNo	7	
\NA	$\frac{n}{a}$	
\coltickNo	7	
\yes	√	
\no	7	11 1 10
onehalf	$\frac{1}{2} + 1$	small one half
\smP0		Small plus one
\smMO	-1	Small minus one (e.g. in smallmatrix)
common/incomplete	Incomplete symbols	
\towrite	to write	Marker for sections to write
\placeholder{,}		A placeholder
	r i	
\citeboh	[xxx]	
\citexxx	[xxx]	
\xxx	???	
\notsure	(Not sure)	
\dontlike	(Don't like this)	
\notformal	(not formal)	

$\begin{tabular}{ll} \verb& betterword & \dots & \\ \hline \end{tabular}$		
\boh	???	incomplete
\bn		bad notation, this should change later
checkbadformat		incomplete
\prooftowritesomeday		•
\myrule{,}		
\unitInverval	[0, 1]	
1	r / J	
common/geometry	Differential geometry	
\diff	Diff	Diffeomorphism
		$Diff(\mathcal{M})$ are the diffeomeorphisms from
		$\star (\max\{M\})$ are the diffeomeor
		$\Lambda \$ to itself.
\diffPos	$Diff_+$	Orientation-preserving diffeomorphism
\homeoPos	$Homeo_+$	Orientation-preserving homeomorphism
$\diffBounded{\dots}$		Diffeomorphisms with bounded curvatu
\diffVol	$Diff_{\mathrm{vol}}$	
homeo	Homeo	Set of all homeomorphisms
isometries	Isom	Isometries group
		$Isom(\mathcal{M})$ are all the isometries of \mathcal{M} .
		\star s\isometries(\aset{M})\$ are all the
		of \$\aset{M}\$.
		Diffeomorphisms that fix a point
\conformalFuncs	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	HI	
\hypspn	\mathbb{H}^n	
common/groups	Group theory	
\gldentity		Identity of a group
·-	e group	Group set with operations
\tgroup	group	
		$\operatorname{group}(G,\cdot)$ means G is a group under \cdot
		<pre>\$\tgroup(\agroup{G},\cdot)\$ means \$\</pre>
\ •	1	is a group under \$\cdot\$.
haar	haar	Haar measure
		The Haar measure on \mathcal{X} is haar ^X .
		The Haar measure on αX is X
	_	
common/groups/famous	Famous groups	
\idGroup	ld	The trivial group with identity only.
\permutations	Perm	Set of permutation
extstyle ext		Stabilizer of a set
extstyle ext		Symmetries of a function
\allsubgroups	AllSubgroups	
$\setminus comgroup\{\ldots\}$		Commutator sub group
\groupJoin	V	Group join
		Conjugation
,		

\groupquotient	/	Group quotient
groupsemidir	\rtimes	Semidirect product.
\groupisom	\cong	Isomorphism
\issubgroup	\leq	Subgroup relation.
\normalsub	⊲	Normal subgroup relation
\actionsymbol		Group action.
		Companions functions
		Transversal functions
common/groups/matrix	$Matrix\ groups$	
\orthogroup	0	Orthogonal group.
\trangroup	Т	Translation group
\segroup	SE	Special Euclidean group.
Egroup	Е	Euclidean group.
SLgroup	SL	Special linear group
Diaggroup	D	Diagonal matrices with non-zero eleme
\PMgroup	D_\pm	Diagonal matrices with ± 1 on the diag
\Scalegroup	Sc	Multiples of the identity
\sogroup	SO	Special orthogonal group.
\soneggroup	SO-	of the second second
\affgroup	Aff	Affine group
\affgrouppos	Aff_+	Affine group
\GL	GL	General linear group
\GLpos	GL ₊	General linear group
. –	· ·	Special Euclidean algebra
\se \soalgebra	se	Special Euclidean algebra
,	SO	Chasial Euglidean algebra
\sealgebra	se	Special Euclidean algebra
\S0three	SO(3)	Special orthogonal group (rotation mat
\SEthree	SE(3)	Special Euclidean group
\SEtwo	SE(2)	Special Euclidean group
\SEthreeAlg	se(3)	
\SEtwoAlg	se(2)	
\S0threeAlg	se(3)	
\SOtwoAlg	se(2)	
\setwo	SE(2)	
\sethree	SE(3)	
\sotwo	SO(2)	
\sothree	SO(3)	
	1711	
common/groups/simple	Very simple groups	Multiplication many
\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	$Aff(\mathbb{R})$	Affine group 1D
affonepos	$Aff_+(\mathbb{R})$	Affine group 1D
\affn	$Aff(\mathbb{R}^n)$	Affine group in n dimensions.
\affnpos	$Aff_+(\mathbb{R}^n)$	Affine transformations preserving orien
larinpos	$\forall n + (\pi z_{-})$	Affilie transformations preserving orien

Probability	
Uniform	Uniform distribution
Support	Support of a probability measure
StocProcesses	Set of stochastic processes
Conditional	Conditional distribution
	Conditional($\mathcal{B};\mathcal{A}$) is the set of condition
	tions
	<pre>\$\conditional(\setB;\setA)\$ is the s</pre>
	conditional distributions
Final	Stationary distribution of a stochastic
meas	Measure space.
	$meas(\mathfrak{X},\Sigma,\mu)$ is a measure space.
	$\mbox{\ensureSp(\aset{X},\Sigma,\mu)} is$
	space.
prob	Probability space.
	$prob(\mathfrak{X}, \Sigma, \mu)$ is a probability space.
	$\scriptstyle \$ \probSp(\aset{X},\Sigma,\mu)\\$ is a
	space.
Measures	Set of probability measures on a set.
	Try $\mu^{\mathcal{X}} \in Measures(\mathcal{X})$
	Try $\sum_{x \in X} $ in \measures(\as
δ	*
Robotics	
m	Inner product bilinear form.
O	Observation output space.
s	
q	Robot pose $q = (t, \mathbf{R}) \in \mathcal{Q} \subset SE(3)$.
Q	Pose space, subgroup of SE(3).
q	Pose space algebra.
Q	Robot configuration space
t	Position in the world frame.
$\frac{t}{}$	Position in the world frame (element)
	Rotation matrix representing orientation
R	Element of rotation matrix
$oldsymbol{v}$	Linear velocity
v	Linear velocity (element)
ω	Angular velocity (as vector)
ω	Angular velocity (element)
ω	Angular velocity in 2D (scalar)
$\hat{oldsymbol{\omega}}$	Angular velocity (as skew-symmetric m
\underline{n}_j	Number of joints in a robot
${f R}$	J
t	l de la companya de
P: 11	
	Total 1 1 her the Cold congon
_	Field sampled by the field sensor.
	Generic position in the world.
<i>z</i>	Generic position in the world.
Maps	
	Uniform Support StocProcesses Conditional Final meas prob Measures δ Robotics m \emptyset s q Q q Q t t R R v v ω ω ω ω ω ω

common/robotics/old	Deprecated	
\wshape	s	
\wpose	$oldsymbol{p}$	
\worldsp	Maps	
\wshapesp	Shapes	
common/robotics/maps	$New \ stuff$	
mshape	s	Map shape.
\mpose	$oldsymbol{p}$	Map pose.
mshapesp	Shapes	Shape space.
\mapsp	Maps	Maps set Maps = Shapes \times SE(3).
common/statistics	$Misc\ statistics$	
\stddev	std	Standard deviation
\var	var	Variance
\ex	\mathbb{E}	Expected value
corr	corr	1
cov	cov	covariance
\spearcorr	spear	Spearman correlation between two vari
\mutualinf	\mathcal{I}	Mutual information
\entr	$\overset{-}{\mathcal{H}}$	Entropy
\varinf	\mathcal{V}	Variation of information
\varinfn	\mathcal{V}_1	Normalized variation of information
	, 1	Pushed forward notation
\distributedAs	~	Distributed as
common/statistics/sorting	$Sorting\ vectors$	
\order	order	Order (or rank) of the elements of a ve
\sorted	sorted	Sorted version of a vector
\differ	differ	Softed version of a vector
\sortedSeq	sortedSeq	
\weaksortedSeq	weaksortedSeq	
	D . 1 .	
common/systems	Dynamical systems	
\CTI	CTI	Continuous-time time-invariant system
\DTI	DTI	Discrete-time time-invariant systems.
\DDTI	DDTI	Deterministic discrete-time time-invaria
DCTI	CDTI	Deterministic continuous-time time-inv
DFSTI	DFSTI	Discrete-time finite-state-space time-in
CFSTI	CFSTI	Continuous-time finite-state-space time
\DFSTIG0	DFSTIGO	Discrete-time finite-state-space time-in
CLTI	CLTI	Continuous-time linear time-invariant s
CLTIG	CLTIG	Continuous-time linear time-invariant s
\DLTI	DLTI	Discrete-time linear time-invariant syst
\DSMPLTI	DSMPLTI	Discrete-time stable minimum-phase li
\DLTIG	DLTIG	Discrete-time linear time-invariant syst
\laptrans	${\cal L}$	Laplace transform
\impulseresp	ImpulseResp	Impulse response of a system
\transferfunc	TF	Transfer function

typography	$Basic\ typography$	
$\mbox{\em myacronym}\{\ldots\}$		All acronyms; good for text as well as
typography/tensors	Tensors and tensor	elements
		Tensor
$Tel{}$		Tensor element
typography/matrices	Matrices and matrix	elements
		A matrix
$Mel{\dots}$		The elements of a matrix
typography/sets	Sets	
		A set
		Fonts for a set which is a group.
		A set X , a group X , G ,
		A set \$\aset{X}\$, a group \$\agroup{X}
		<pre>\$\agroup{G}\$, \dots</pre>
$aseq{}$		Formatting for sequences
		Formatting for one element in a sequer
\dummyIndices		
typography/misc	Everything else	
		How words should look like in formulas
		Consider the operator scale,
		Consider the operator \$\aword{scale}
$\mathbf{vmath}\{\ldots\}$		How words should appear in math mod