bootstrapping

| bootstrapping/agents | *Agents and tasks* | |
|---|---|---|
| \agSp | $\mathsf{Agents}$ | |
| \agSpYU | $\mathsf{Agents}(\mathcal{Y};\mathcal{U})$ | All agents with given formats. |
| \agA | $\mathcal{A}$ | An agent |
| \agExp | $\mathsf{expl}$ | Agent's exploration phase |
| \agLearn | $\mathsf{learn}$ | Agent's learning phase |
| \agAct | $\mathsf{act}$ | 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 $\mathsf{StocProcesses}(\mathcal{Y}\times\mathcal{U})$) |

articles

| articles/bds | *BDS report* | |
|---|---|---|
| \BDSnk | $\mathsf{BDS}(n;k)$ | |
| \BDSSk | $\mathsf{CBDS}(\mathcal{S};k)$ | |
| \bgBDSfamily | $\mathsf{BDS}$ | Family of BDS sensors |
| \bgCBDSfamily | $\mathsf{CBDS}$ | Family of BDS sensors |
| \bds | BDS | Bilinear dynamics system |
| \BDS | BDS | |
| \cbds | CBDS | Continuous-space bilinear dynamics system |
| \CBDS | CBDS | |
| \omsum{...} | | omitted sum |
| \omsumb{...,...} | | omitted sum (two arguments) |
| \TT | $\mathbf{T}$ | Learned tensor |
| \TTe | $\mathsf{T}$ | ? |
| \TP | $\mathbf{P}$ | |
| \TPe | $\mathsf{P}$ | |
| \TU | $\mathbf{U}$ | Learned tensor |
| \TUe | $\mathsf{U}$ | Learned tensor |
| \TM | $\mathbf{M}$ | Bilinear tensor in BDS dynamics |
| \TMe | $\mathsf{M}$ | Bilinear tensor in BDS dynamics |
| \TN | $\mathbf{N}$ | Bilinear tensor in BDS dynamics |
| \TNe | $\mathsf{N}$ | Bilinear tensor in BDS dynamics |
| \Tcov | $\mathbf{P}$ | Covariance of $\boldsymbol{y}$. |
| \Tcove | $\mathsf{P}$ | Covariance of $\boldsymbol{y}$. |

| | | |
|---|---|---|
| \Tucov | $\mathbf{Q}$ | Covariance of $\boldsymbol{y}$. |
| \Tucove | $\mathsf{Q}$ | 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 | $\mathsf{W}$ | World |
| \bgWorldSp | $\mathcal{W}$ | World space |
| | | $\mathsf{W} \in \mathcal{D}(\mathbb{T}, \mathcal{U}, \mathcal{Y})$<br>`$\bgWorld \in \bgRSSp(\bgTime, \bgCmdSp, \bgObsSp)$` |
| \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 | Sampling | Groups of sampling operations |
| \bgCalibration | Calib | Calibration operation |
| \bgBDSagent | $A_{\mathsf{BDS}}$ | The BDS agent |
| \bgBGDSagent | $A_{\mathsf{BGDS}}$ | The BGDS agent |
| \bgPopCode | pop | Popoulation code |
| \bgRankCode | rankcode | Rank code |
| \bgRangeFamily | RF | Family of range-finders models |
| \bgFields | C | |
| \bgCmdConstraints | $\Omega_{\boldsymbol{u}}$ | |
| \bgPopK | $\psi$ | |

articles/bgds/old — *BGDS report*

| | | |
|---|---|---|
| \state | $\boldsymbol{x}$ | Generic underlying state. |
| \stateSp | $\mathcal{X}$ | Generic underlying state space. |
| \detecte | $d$ | Detector |
| \submean{...} | | Quantity with mean normalized. |
| \dist | $\sigma$ | Distance to obstacle |
| \distn | $\sigma^*$ | Distance to obstacle, mean normalized. |
| \rfnl | $\beta$ | Nonlinear function in range-finder tensors. |
| \near | $\mu$ | Nearness |
| \lum | $y$ | Luminance |
| \lumn | $y^*$ | Luminance, mean normalized |
| \sptran | $\boldsymbol{\ell}$ | Sensor pose (translation) |
| \sprot | $\ell_\theta$ | Sensor pose (rotation) |
| \slvel | $\boldsymbol{v}^{\boldsymbol{s}}$ | Sensor linear velocity (when off axis) |

| | | |
|---|---|---|
| \savel | $\boldsymbol{\omega^s}$ | Sensor angular velocity (when off axis) |
| \TX | $\mathbf{X}$ | Generic metric |
| \TXe | $\mathsf{X}$ | Generic metric |
| \OS | $\mathsf{S}$ | $S = s \times \nabla$ |
| \convf | $f_*$ | Indicates the convolution with a kernel $f$. |
| \my | $m$ | Metric on the tangent space of $y(s)$. |
| \ip{...} | | |
| \bgBGDSfamily | $\mathsf{BGDS}$ | Family of BGDS sensors |
| \BGDSsk | $\mathsf{BGDS}(\mathcal{S}; k)$ | |
| \focal | $F$ | Pinhole camera focal length. |
| \traindist | $p_{\mathrm{T}}$ | Training distribution. |
| \trainsym | $\mathsf{Sym}(p_{\mathrm{T}})$ | Symmetry group of $p_{\mathrm{T}}$. |

| 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 | $\varphi$ | Mapping between $\mathcal{S}$ and $\mathcal{Z}$. |
| \jac | $\mathbf{J}$ | Jacobian of $\varphi$ |
| \jace | $\mathsf{J}$ | An element of the Jacobian of $\varphi$. |
| \mz | $\mu$ | 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 | $\mathsf{L}$ | $\boldsymbol{z}$ gradient dynamics (element) |
| \Tzgl | $\mathbf{M}$ | $\boldsymbol{z}$ gradient learned tensor |
| \Tzgle | $\mathsf{M}$ | $\boldsymbol{z}$ gradient learned tensor (element) |
| \Tzgcov | $\mathbf{S}$ | $\boldsymbol{z}$ gradient covariance |
| \Tzgcove | $\mathsf{S}$ | $\boldsymbol{z}$ gradient covariance (element) |
| \Tzad | $\mathbf{E}$ | Affine part of dynamics. |
| \Tzade | $\mathsf{E}$ | Affine part of dynamics (element) |
| \Tzal | $\mathbf{F}$ | Learned affine part of dynamics. |
| \Tzale | $\mathsf{F}$ | Learned affine part of dynamics (element) |

| articles/bgds/tensors | *BGDS report* | |
|---|---|---|
| \Tygd | $\mathbf{G}$ | $\boldsymbol{y}$ gradient dynamics |
| \Tygde | $\mathsf{G}$ | $\boldsymbol{y}$ gradient dynamics (element) |
| \Tygl | $\mathbf{H}$ | $\boldsymbol{y}$ gradient learned tensor |
| \Tygle | $\mathsf{H}$ | $\boldsymbol{y}$ gradient learned tensor (element) |
| \Tygcov | $\mathbf{R}$ | $\boldsymbol{y}$ gradient covariance |
| \Tygcove | $\mathsf{R}$ | $\boldsymbol{y}$ gradient covariance (element) |
| \Tyad | $\mathbf{B}$ | Affine part of dynamics. |
| \Tyade | $\mathsf{B}$ | Affine part of dynamics (element) |
| \Tyal | $\mathbf{C}$ | Learned affine part of dynamics. |
| \Tyale | $\mathsf{C}$ | 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 | $e_{\mathrm{pr}}$ | Procrustes score |
| \isoError | $e_{\mathsf{iso}}$ | |
| \symError | $e_{\mathsf{sym}}$ | |
| \relError | $e_{\mathsf{r}}$ | |
| \scaledRelError | $e_{\mathsf{sr}}$ | |
| \angcorr | $\rho_{\theta}$ | |
| \spearperf | $\rho_{\mathrm{sp}}$ | Spearman performance measure |
| \spearperfn | $\rho^{*}_{\mathrm{sp}}$ | 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 | $\mathrm{C}_{ij}$ | |
| \distmat | $\mathbf{D}$ | |
| \distmatij | $\mathrm{D}_{ij}$ | |
| \simmat | $\mathbf{Y}$ | Similarity matrix |
| \simmatij | $\mathrm{Y}_{ij}$ | |
| \simmatii | $\mathrm{Y}_{ii}$ | |
| \simmatkl | $\mathrm{Y}_{kl}$ | |
| \algorparam | $\gamma$ | |
| \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 warping) |

| articles/dds | *DDS report* | |
|---|---|---|
| \ddsres | $\rho$ | 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 DDS. |
| \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 | $\Gamma$ | Uncertainty of estimated diffeomorphism. |
| \diffDist | $d^{\mathsf{Diff}}$ | Distance between two diffeomorphism. |
| \cmdDist | $\mathcal{D}_{\text{cmd}}$ | Distance between two commands. |
| \cmdADist | $\mathcal{A}_{\text{cmd}}$ | Anti-distance between two commands. |
| \images | $\mathbb{F}(\mathcal{S})$ | |
| \obspsV | $\mathcal{V}$ | viewport |
| \ddsfov | $\mathcal{V}$ | viewport |
| \obspsVunpred | $\mathcal{V}^{\overline{\text{pr}}}$ | undpredictable part |
| \obspsVpred | $\mathcal{V}^{\text{pr}}$ | predictable part |
| \obspsVunpredt | $\mathcal{V}_t^{\overline{\text{pr}}}$ | undpredictable part at time t |
| \obspsVpredt | $\mathcal{V}_t^{\text{pr}}$ | predictable part at time t |
| \ddsctod | C_TO_DIFF | |
| \ddsste | $x$ | State of a DDS (element) |
| \ddsst | $\boldsymbol{x}$ | State of a DDS |

| articles/deepdyn | *Learning of latent/deep dynamics* | |
|---|---|---|
| \ldmap | $\gamma$ | Map from latent state to instantaneous dynamics |
| \hclass | $\mathcal{H}$ | Hidden class |
| \iclass | $\mathcal{M}$ | Instantnaeous class |

| articles/despl | *Parallel learning paper* |
|---|---|
| \atype{...} | |
| \mycode{...} | |
| \desplStats | **Stats** |
| \desplIStats | **IStats** |
| \desplData | **Data** |
| \desplIData | **IData** |
| \desplModels | **Models** |
| \desplIModels | **IModels** |
| \desplllearn | learn |
| \desplilearn | ilearn |

| | | |
|---|---|---|
| \desplfilter | filter | |
| \desplfmodel | fm | |
| \desplistats | istats | |
| \desplglue | glue | |
| \desplmglue | mglue | |
| \desplstats | stats | |
| \desplmerge | merge | |
| \desplInter | $\mathbf{I}$ | Interval |
| \patternA | $Slice - Stats - Merge$ | |
| \patternB | $Split - Stats - Glue$ | |
| \patternC | $Filter - Learn - Glue$ | |
| \patternD | $Recursive - Learn$ | |
| \proto | $A2$ | |
| \slicelen | `slicelen` | |
| \njobslearn | $n_{\text{learn}}$ | |
| \njobsmerge | $n_{\text{merge}}$ | |
| \njobstotal | $n_{\text{jobs}}$ | |

| articles/compmake | *Compmake* |
|---|---|
| \Compmake | *Compmake* |
| \parmake | `parmake` |
| \sgemake | `sgemake` |

| articles/dptr1 | *Technical report for diffeoplanning* |
|---|---|

| articles/dptr1/spaces | *spaces* | |
|---|---|---|
| \SetImages | Im | |
| \SetUImages | UIm | |
| \genericdist{...,...} | | |
| \genericudist{...,...} | | |
| \obsstart | $\boldsymbol{y}_{\text{start}}$ | |
| \obsgoal | $\boldsymbol{y}_\circ$ | |
| \SetPlans | Plans | |
| \planSp | Plans | |
| \redplans | RedPlans | reduced plans |
| \plan | $p$ | a generic plan |
| \plang | $p_\circ$ | true plan |
| \planf | $p^\star$ | The solution found |
| \zeroplan | $\emptyset$ | |
| \obsu | $\boldsymbol{z}$ | Scalar uncertainty |
| \obsue | $z$ | Scalar uncertainty |
| \sarea | $A$ | area around pixel s |
| \dd | $\boldsymbol{\varphi}$ | Generic diffeomorphisms |
| \dde | $\varphi$ | Generic diffeomorphisms |
| \ddu | $\boldsymbol{\gamma}$ | its uncertaint |
| \ddue | $\gamma$ | its uncertaint |
| \udiffSp | UDiff | |

| articles/dptr1/structure | *Diffeo structure* |
|---|---|
| \dscommute | commute |
| \dsinverse | inverse |

| | | |
|---|---|---|
| \dssame | same | |
| \dsvoid | void | |
| \SOtwo | $\mathrm{SO}(2)$ | |
| | | |
| articles/dptr1/simplification | *plan reduce* | |
| \plantodiff | p_to_d | |
| \ptod | p_to_d | |
| \pd | p_to_d | |
| \planreduce | PlanReduce | |
| \noutoforder | noutoforder | TODO |
| | | |
| articles/dptr1/distances | *Distances* | |
| \dDiffLone | $d_{L_1}^{\mathsf{Diff}(\mathcal{S})}$ | |
| \dUDiffLone | $\overline{d}_{L_1}^{\mathsf{UDiff}(\mathcal{S})}$ | |
| \dobsps | $d^{\mathcal{S}}$ | |
| \dImL{...} | | |
| \dImLone | $d_{L_1}^{\mathsf{Im}}$ | |
| \dImLtwo | $d_{L_2}^{\mathsf{Im}}$ | |
| \dImN{...} | | |
| \dImD{...} | | |
| \cmdOrd | $\prec$ | |
| \algoname{...} | | |
| \gnbc | GNB | |
| \bnbc | BNB | |
| \bngc | BNG | |
| \bntc | BNT | |
| \gebc | GEB | |
| \bebc | BEB | |
| \begc | BEG | |
| \betc | BET | |
| \betcb | BETc | |
| \plansarea | $P_{\mathrm{near}}$ | |
| \algocover | cover | |
| \algoplanreduce | planreduce | |
| \algobidirectional | bidirectional-search | |
| \dubinsys | $Dubin's car$ | |
| \orbitsys | $Orbit camera$ | |
| \markit{...} | | |
| \markA | † | |
| \markB | ‡ | |
| \markC | § | |
| \distthres | $c$ | |
| \btrue | true | |
| \bfalse | false | |
| \botherwise | otherwise | |
| \cmdleft | $\boldsymbol{u}_{left}$ | |
| \cmdright | $\boldsymbol{u}_{right}$ | |
| \cmdup | $\boldsymbol{u}_{top}$ | |
| \cmddown | $\boldsymbol{u}_{down}$ | |
| \imvis | vis | Visibility |
| \minvis | $v_0$ | |

| | | |
|---|---|---|
| \maxdis | $d_g$ | goal threshold |
| \impred | $\mathsf{pred}$ | Image prediction |
| \plA | $RLrl$ | |

| articles/neucontrol | *neuromorphic control* | |
|---|---|---|
| \clip{...} | | Clip up to some boundary |
| \maxu | $b$ | |
| \clipu | $\mathsf{sat}_b$ | |
| \gain | $\kappa$ | |
| \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 | $\Delta_s$ | Spatial sampling |
| \dt | $\Delta_t$ | Temporal sampling |
| \db | $\Delta_b$ | Brightness threshold |
| \dvsth | $\Delta_b$ | Threshold |
| \camexp | EX | Exposure |
| \mseps | $\mathrm{MSE}_{\mathrm{ps}}$ | periodic sampling |
| \mseeb | $\mathrm{MSE}_{\mathrm{eb}}$ | MSE event based |
| \bwps | $\mathrm{BW}_{\mathrm{ps}}$ | bandwidth periodic sampling |
| \bweb | $\mathrm{BW}_{\mathrm{eb}}$ | bandwidth event based |
| \ori | $\alpha$ | |

| 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 |
| | | $\boldsymbol{y} = \boldsymbol{n}h(\boldsymbol{x})$<br>`$\esObs = \esNuis \esObsMap(\esSt)$` |

| articles/estgroups/nuisances | *Nuisances* | |
|---|---|---|
| \esNuis | $\boldsymbol{n}$ | Nuisance |
| \esNuisSp | $\mathrm{N}$ | 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 | $\varphi$ | Representation |
| | $\varphi : x \mapsto \boldsymbol{\alpha}$. | |
| | \$\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/1509-gcmdp

| | | |
|---|---|---|
| \dprobsp | DP | |
| \dprob | dp | Design problem |
| \dpseries | series | |
| \dppar | par | |
| \dploop | loop | |
| \cdprobsp | CDP | |
| \cdprob | cdp | Design problem |
| \dpatoms | atoms | Atoms of a cdp |
| \resMin | $\mathrm{Min}_{\leq_{\mathfrak{R}}}$ | |

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 as a gro |
| \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 |
| \brel | $\leq_B$ | Simulation partial order |
| \bsim | $\sim_B$ | Simulation relation |

| articles/jbds | *Symbols introduced in JBDS* | |
|---|---|---|
| \veh | $B$ | A vehicle body |
| \vehBody | $B$ | A vehicle body |
| \vehKin | $K$ | Vehicle kinematics |
| \vehSensPos | $\boldsymbol{r}$ | Sensor relative pose |
| \vehSensFun | $\psi$ | Function that defines an exteroceptive sensor |
| \env | $e$ | 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 |
| \envob | $\partial\mathcal{O}$ | Obstacles boundaries |
| \obspsDiff | $\mathcal{S}^{\mathrm{dif}}$ | |
| \obspsNotDiff | $\mathcal{S}^{\overline{\mathrm{dif}}}$ | |
| \sic | VS | ideal camera |
| \sir | RF | ideal range finder |
| \sif | FS | ideal field sampler |
| \sicV | VS($\mathcal{V}$) | ideal camera with viewport |
| \sirV | RF($\mathcal{V}$) | ideal range finder with viewport |
| \sifV | FS($\mathcal{V}$) | ideal field sampler with viewport |
| \zoh{...} | | Zero order hold |

| articles/jbds/misc | *Used in proofs for JBDS* | |
|---|---|---|
| \ygneig | $N$ | A neighborhoood of $\boldsymbol{y}_\circ$. |

| articles/jbds/robots | | |
|---|---|---|
| \allrobots | Robots | The set of all robots |
| \vehRob | ISV | Idealized Simple Vehicles |
| \vehRobNuis | $\tilde{\mathsf{ISV}}$ | Vehicle robots with nuisances |
| \robVeh | ISV | |

| articles/optbody | *Optimal design of body and mind* | |
|---|---|---|
| \MA | $\mathbf{A}$ | |
| \MB | $\mathbf{B}$ | |
| \MC | $\mathbf{C}$ | |
| \MG | $\mathbf{G}$ | |
| \MH | $\mathbf{H}$ | |
| \ML | $\mathbf{L}$ | |
| \MQ | $\mathbf{Q}$ | |
| \MP | $\mathbf{P}$ | |
| \MS | $\mathbf{S}$ | |
| \MSigma | $\mathbf{\Sigma}$ | |

| | | |
|---|---|---|
| \MV | $\mathbf{V}$ | |
| \MW | $\mathbf{W}$ | |
| \SP | $P_{\mathrm{s}}$ | Sensing power |
| \AP | $P_{\mathrm{a}}$ | Actuation power |
| \SE | $E$ | Stored energy |
| \ER | $r$ | Trajectory efficiency ratio |
| \HP | $\Theta$ | Heading precision |
| \np | $n$ | Number of pixels |

| articles/1508-rafc | *Function, implementation, etc.* | |
|---|---|---|
| \funsp | $\mathcal{F}$ | Function space |
| \funleq | $\leq_{\mathcal{F}}$ | Function space |
| \fun | $\mathsf{f}$ | Function |
| \funtop | $\top_{\mathcal{F}}$ | |
| \funbot | $\bot_{\mathcal{F}}$ | |
| \imp | $\mathsf{i}$ | Implementation |
| \impsp | $\mathcal{I}$ | Implementation space |
| \exc | $\mathsf{exec}$ | Executation $\mathsf{exec} : \mathcal{I} \to \mathcal{F}$ |
| \eval | $\mathsf{eval}$ | Evaluation $\mathsf{eval} : \mathcal{I} \to \mathcal{R}$ |
| \paramsp | $\mathcal{P}$ | Parameter space |
| \res | $\mathsf{r}$ | Resources |
| \resleq | $\leq_{\mathcal{R}}$ | |
| \restop | $\top_{\mathcal{R}}$ | |
| \resbot | $\bot_{\mathcal{R}}$ | |
| \ressp | $\mathcal{R}$ | Resources space |
| \resspleq | $\leq_{\mathcal{R}}$ | |
| \tressp | $\mathcal{T}(\mathcal{R})$ | Trade-off space |
| \trof | $\mathcal{T}$ | Trade-off space |
| \tres | $T$ | |
| \tresleq | $\leq_{\mathcal{T}}$ | Trade-off space |
| \trleq | $\leq_{\mathcal{T}}$ | Trade-off space |
| \Res | $S$ | |
| \Resa | $S_1$ | |
| \Resb | $S_2$ | |
| \resa | $\mathsf{r}_1$ | |
| \resb | $\mathsf{r}_2$ | |
| \Ressp | $\mathcal{P}(\mathcal{R})$ | |
| \Resleq | $\leq_{\mathcal{P}(\mathcal{R})}$ | |
| \rtoapp | $\Psi$ | |
| \colR | | |
| \colF | | |
| \colH | | |
| \CHF | CHF | |

| articles/1508-ragh | *Resource Allocation problem* | |
|---|---|---|
| \clatency | $\mathsf{latency}$ | |
| \cperiod | $\mathsf{period}$ | |

| articles/1508-ragh/rgraph | *Resource Graph* | |
|---|---|---|
| \rN | $\mathsf{rN}$ | A resource graph's vertices |
| \rE | $\mathsf{rE}$ | A resource graph's edges |

| | | |
|---|---|---|
| \rG | $\mathsf{rG}$ | A resource graph |
| \rGsp | $\mathsf{RG}$ | Space of resource graphs |
| \rn | $\mathsf{rn}$ | A resource node |
| \rnops | $\mathsf{rn.capacity}$ | A resource's capacity |
| \rntype | $\mathsf{rn.type}$ | A resource's type |
| \rntypes | $\mathsf{RTypes}$ | A resource's type |
| \rnA | $\mathsf{rn}_1$ | |
| \rnAops | $\mathsf{rn}_1\mathsf{.capacity}$ | |
| \rnB | $\mathsf{rn}_2$ | |
| \rnBops | $\mathsf{rn}_2\mathsf{.capacity}$ | |
| \re | $\mathsf{re}$ | A resource edge |
| \relink | $\mathsf{re.link}$ | A resource |
| \relatency | $\mathsf{re.latency}$ | |
| \rebandwidth | $\mathsf{re.bandwidth}$ | |
| \reA | $\mathsf{re}_1$ | |
| \reB | $\mathsf{re}_2$ | |
| \reAlatency | $\mathsf{re}_1\mathsf{.latency}$ | |
| \reAbandwidth | $\mathsf{re}_1\mathsf{.bandwidth}$ | |
| \reBbandwidth | $\mathsf{re}_2\mathsf{.bandwidth}$ | |
| \reiint | $\mathsf{re.int1}$ | Output interface (first node) |
| \reoint | $\mathsf{re.int2}$ | Input interface (second node) |

| articles/1508-ragh/cgraph | *Computation Graph* | |
|---|---|---|
| \cG | $\mathsf{cG}$ | A computationg graph |
| \cGsp | $\mathsf{CG}$ | Computation graph spaces |
| \cGleq | $\leq_{\mathsf{CG}}$ | Order on computation graphs |
| \cN | $\mathsf{cN}$ | A cgraph's vertices |
| \cE | $\mathsf{cE}$ | A cgraph's edges |
| \cn | $\mathsf{cn}$ | A computation node |
| \cnA | $\mathsf{cn}_1$ | |
| \cnB | $\mathsf{cn}_2$ | |
| \cnops | $\mathsf{cn.ops}$ | A computation node's ops |
| \dotops | $\mathsf{.ops}$ | |
| \cnAops | $\mathsf{cn}_1\mathsf{.ops}$ | |
| \cnBops | $\mathsf{cn}_2\mathsf{.ops}$ | |
| \cce | $\mathsf{ce}$ | A computation edge |
| \ceA | $\mathsf{ce}_1$ | A computation edge |
| \ceB | $\mathsf{ce}_2$ | A computation edge |
| \dotsize | $\mathsf{.size}$ | |
| \cesize | $\mathsf{ce.size}$ | Signal size (bytes) |
| \ceAsize | $\mathsf{ce}_1\mathsf{.size}$ | |
| \ceBsize | $\mathsf{ce}_2\mathsf{.size}$ | |

| articles/1508-ragh/links | *Physical links* | |
|---|---|---|
| \PL | $\mathsf{PLinks}$ | Physical links |
| \pl | $\mathsf{pl}$ | Physical link |
| \pplA | $\mathsf{pl}_1$ | plA conflicts |
| \plAlatency | $\mathsf{pl}_1\mathsf{.latency}$ | |
| \plAbandwidth | $\mathsf{pl}_1\mathsf{.bandwidth}$ | |
| \pllatency | $\mathsf{pl.latency}$ | |
| \plbandwidth | $\mathsf{pl.bandwidth}$ | |

| articles/1508-ragh/allocations | *Allocations* | |
|---|---|---|
| \as | $\mathsf{as}$ | An assignment |
| \asm | $\mathsf{as.m}$ | The momomorphism |
| \asmn | $\mathsf{as.m}_N$ | |
| \asme | $\mathsf{as.m}_E$ | |
| \asmni | $\mathsf{as.m}_N^{-1}$ | |
| \asmei | $\mathsf{as.m}_E^{-1}$ | |
| \asmi | $\mathsf{as.m}^{-1}$ | The right inverse of the momomorphism |
| \asla | $\mathsf{as}.\alpha$ | The link allocation |
| \asca | $\mathsf{as}.\beta$ | The computation allocation |
| \ctdelay | $\mathsf{delay}$ | Continuous-time delay |
| \ctsample | $\mathsf{sample}$ | Continuous-time sample |
| \rtof | $\varphi$ | |
| \ftor | $h$ | |
| \ftoR | $H$ | |
| \Rcomp | $\overline{\mathbb{R}}^+$ | |
| \dpvars | $\mathcal{V}$ | |
| \benchmark | $\mathsf{benchmark}$ | |
| \deploy | $\mathsf{deploy}$ | |
| \utypes | $\mathbf{U}$ | Universe of types |
| \app | $\mathsf{app}$ | |
| \appsp | $\mathsf{Apps}$ | |
| \ghom | $h$ | |
| \ghomv | $h_V$ | |
| \ghome | $h_E$ | |
| \ghomsp | $\mathsf{Hom}$ | Homomorphism space of two gaphs |
| | | $\mathsf{Hom}(\mathsf{cG},\mathsf{rG})$<br>`$\ghomsp(\cG,\rG)$` |
| \mydash | – | |
| \rgcmd | $\mathsf{driver\text{–}cmd}$ | |
| \rgobs | $\mathsf{driver\text{–}obs}$ | |
| \cgcmd | $\mathsf{output}$ | |
| \cgobs | $\mathsf{input}$ | |

| articles/soattotheory | *Symbols used by Soatto* | |
|---|---|---|
| \scene | $\xi$ | scene |
| \representation | $\hat{\xi}$ | representation |
| \minrep | $\hat{\xi}^\vee$ | minimal representation |
| \feature | $\phi$ | 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 | $\nu$ | other non-invertible nuisance |
| \lightfield | $\mathcal{L}$ | all possible images generated by a scene |
| \complex | $H$ | Complexity measure |
| \actinfo | $\mathcal{H}$ | Actionable information |
| \covdet | $\psi$ | Covariant detector |

| articles/soattotheory/mseerep | *msee report* | |
|---|---|---|
| \nuddisc{...} | | Domain sampling operator (subset) |
| \nusample{...} | | Domain sampling operator (subset) |
| \nuvdisc{...} | | Value Discretization operator (subset) |
| \nusmooth{...} | | Smoothing operator (kernel) |
| \nucens{...} | | Censoring operator (field of view) |
| \nuoccl{...} | | Occlsions |
| \imform | $I$ | |
| \contrast | $f$ | |

| 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 |
| \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 | $\rho$ | 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 | $\mathsf{CalibA}$ | |
| \CalibB | $\mathsf{CalibB}$ | |
| \Smoothkernel | $k$ | |
| \Smooth | $\mathsf{Smooth}_k$ | |
| \BGDSAg | $\mathsf{BGDSagent}$ | |
| \BGDSAgS | $\mathsf{BGDSagentS}$ | |
| \DImagesU | $\mathcal{D}(\mathsf{Im}(\mathcal{S}); \mathcal{U})$ | |
| \DImagesR | $\mathcal{D}(\mathsf{Im}(\mathcal{S}); \mathbb{R}^{n_{\boldsymbol{u}}})$ | |
| \ABehavior | *behavior* | |
| \DImagesSphU | $\mathcal{D}(\mathsf{Im}(\mathbb{S}^2); \mathcal{U})$ | |
| \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/inv-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 | $\mathsf{Tr}$ | Trace of a matrix. |
| \angleFun | $\angle$ | Angle function |
| \flatten | $\mathsf{vec}$ | Matrix-to-vector rearrangement. |

| common/basic | *Basic stuff* | |
|---|---|---|
| \setfun | $\rightrightarrows$ | Symbol for set functions (one-to-many) |
| \algfield | $\mathsf{field}$ | Field. |
| | | $\mathsf{field}(\mathcal{X},+,\times)$ is an algebraic field.<br>`$\algfield(\aset{X},+,\times)$ is an algebraic field.` |
| \wellorder | $\mathsf{wellorder}$ | A well ordered set. |
| | | $\mathsf{wellorder}(\mathcal{X},\leq)$ is a well-ordered set.<br>`$\wellorder(\aset{X},\leq)$ is a well-ordered set.` |
| \orderedfield | $\mathsf{orderedfield}$ | A well ordered field. |
| | | $\mathsf{orderedfield}(\mathcal{X},+,\times,\leq)$ is a well-ordered field.<br>`$\orderedfield(\aset{X},+,\times,\leq)$ is a well-ordered field.` |
| \powerset | $\mathsf{powerset}$ | Power set of a space |
| \supp | $\mathsf{supp}$ | Support of a set |
| \idFunc | $\mathsf{Id}$ | The identity function |

| | | |
|---|---|---|
| \invFunc | $\cdot^{-1}$ | Inverse function |
| \funcComp | $\circ$ | Function composition |
| \emptysequence | $\emptyset$ | Empty sequence |
| \allFuncs | Functions | All maps from a space to the other |
| \D | $\mathrm{d}$ | 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 | $\mathbb{R}_\circ$ | Nonzero 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 | $\Delta$ | The one-step delay system. |
| \vertblock | $\mathsf{I}$ | |
| \bbAccum | $\mathsf{III}$ | 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 | $\mathcal{D}_{\text{inst}}$ | Set of instantaneous systems |
| \bbSpDet | $\mathcal{D}_{\text{det}}$ | Deterministic systems |
| \bbSpInvIns | $\mathcal{D}^\star_{\text{inst}}$ | 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 | $\boldsymbol{G}$ | |
| \bbH | $\boldsymbol{H}$ | |
| \bbL | $\boldsymbol{L}$ | |
| \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 |
| \bbSpAny | $\mathcal{D}_*$ | Any of the following |
| \bbSpDT{...} | | Discrete time |
| \bbSpCT | $\mathcal{D}^{\text{c}}$ | Continuous time |
| \bbSpEB | $\mathcal{D}^{\text{e}}$ | Event-based |

common/boot *Bootstrapping symbols*

common/boot/obscmd *Observations and commands*

| | | |
|---|---|---|
| \world | m | The "world", an element of $\mathcal{D}(\mathcal{Y};\mathcal{U})$. |
| \obs | $\boldsymbol{y}$ | Observations vector. |
| \obse | $y$ | Observations element. |
| \cmd | $\boldsymbol{u}$ | Commands vector. |
| \cmde | $u$ | Commands element. |
| \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 | Im | Images on physical space $\mathcal{S}$. |
| \imps | $\mathsf{Im}(\mathcal{S})$ | Images on physical space $\mathcal{S}$. |

| common/boot/servo | *Servoing* | |
|---|---|---|
| \obsgmark | $\circ$ | |
| \obsg | $\boldsymbol{y}_\circ$ | Goal observations. |
| \obsge | $y_\circ$ | Goal observations (element). |
| \obsgl | $\boldsymbol{z}_\circ$ | Goal observations (element). |
| \obsgle | $z_\circ$ | Goal observations (element). |

| common/boot/abbreviations | *Abbreviations* | |
|---|---|---|
| \bbSpYU | $\mathcal{D}(\mathcal{Y};\mathcal{U})$ | **to write** |
| \bbSpYXU | $\mathcal{D}(\mathcal{Y};\mathcal{X};\mathcal{U})$ | **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 | |

| common/vehicles/mah | *todo* | |
|---|---|---|
| \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.*, | |
| \viceversa | *viceversa* | |
| \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* | |
|---|---|---|
| \towrite | **to write** | Marker for sections to write |
| \placeholder{...,...} | | A placeholder |
| \tocite{...} | | |
| \citeboh | [*xxx*] | |
| \citexxx | [*xxx*] | |
| \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 |
| | | Diff($\mathcal{M}$) are the diffeomeorphisms from $\mathcal{M}$ to itself. `$\diff(\aset{M})$ are the diffeomeorphisms from $\aset{M}$ to itself.` |
| \diffPos | $\mathsf{Diff}_+$ | Orientation-preserving diffeomorphism. |
| \homeoPos | $\mathsf{Homeo}_+$ | Orientation-preserving homeomorphisms (of the real line |
| \diffBounded{...} | | Diffeomorphisms with bounded curvature |

| | | |
|---|---|---|
| \diffVol | $\mathsf{Diff}_{\mathrm{vol}}$ | |
| \homeo | Homeo | Set of all homeomorphisms |
| \isometries | Isom | Isometries group |
| | | Isom($\mathcal{M}$) are all the isometries of $\mathcal{M}$.<br>`$\isometries(\aset{M})$ are all the isometries of $\aset{M}$.` |
| \diffFix{...} | | 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 | $\mathbb{H}$ | |
| \hypspn | $\mathbb{H}^n$ | |

| graphs | *Graphs* | |
|---|---|---|
| \paths | paths | All paths in a graph |
| \walks | walks | All paths in a graph |
| \head | head | |
| \tail | tail | |
| \nodes | nodes | nodes in a walk |
| \edges | edges | edges in a walk |
| \sources | sources | |
| | | sources(cG)<br>`$\sources(\cG)$` |
| \sinks | sinks | |
| | | sinks(cG)<br>`$\sinks(\cG)$` |
| \predecessors | pred | predecessors of a node |
| | | pred(cn)<br>`$\predecessors(\cn)$` |
| \successors | succ | successors of a node |
| | | pred(cn)<br>`$\predecessors(\cn)$` |

| 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 $\cdot$.<br>`$\tgroup(\agroup{G},\cdot)$ means $\agroup{G}$ is a group under $\cdot$.` |
| \haar | haar | Haar measure |
| | | The Haar measure on $\mathcal{X}$ is $\mathsf{haar}^{X}$.<br>`The Haar measure on $\aset{X}$ is ${\haar}{\X}$.` |

| 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 | $\mathsf{O}$ | Orthogonal group. |
| \trangroup | $\mathsf{T}$ | Translation group |
| \segroup | $\mathsf{SE}$ | Special Euclidean group. |
| \Egroup | $\mathsf{E}$ | Euclidean group. |
| \SLgroup | $\mathsf{SL}$ | Special linear group |
| \Diaggroup | $\mathsf{D}$ | Diagonal matrices with non-zero elements. |
| \PMgroup | $\mathsf{D}_{\pm}$ | Diagonal matrices with $\pm 1$ on the diagonal. |
| \Scalegroup | $\mathsf{Sc}$ | Multiples of the identity |
| \sogroup | $\mathsf{SO}$ | Special orthogonal group. |
| \soneggroup | $\mathsf{SO}^{-}$ | |
| \affgroup | $\mathsf{Aff}$ | Affine group |
| \affgrouppos | $\mathsf{Aff}_{+}$ | Affine group |
| \GL | $\mathsf{GL}$ | General linear group |
| \GLpos | $\mathsf{GL}_{+}$ | |
| \se | $\mathsf{se}$ | Special Euclidean algebra |
| \soalgebra | $\mathsf{so}$ | |
| \sealgebra | $\mathsf{se}$ | 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 |
| \SEthreeAlg | $\mathsf{se}(3)$ | |
| \SEtwoAlg | $\mathsf{se}(2)$ | |
| \SOthreeAlg | $\mathsf{se}(3)$ | |
| \SOtwoAlg | $\mathsf{se}(2)$ | |
| \setwo | $\mathrm{SE}(2)$ | |
| \sethree | $\mathrm{SE}(3)$ | |
| \sotwo | $\mathrm{SO}(2)$ | |
| \sothree | $\mathrm{SO}(3)$ | |

| 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/abb | *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. |

basic

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| basic/optimization | *Optimization staff* | |
|---|---|---|
| \subto | s.t. | Subject to in math |
| \with | using | "With" |

| basic/posets | *Partial orders* | |
|---|---|---|
| \pset | $\mathcal{P}$ | Power set (latenative to powerset |
| \lowerbounds | lowerbounds | |
| \upperbounds | upperbounds | |
| \posMin | Min | |
| \posleq | $\preceq$ | |
| \posgeq | $\succeq$ | |
| \posA | $\mathcal{P}$ | |
| \posAleq | $\preceq_{\mathcal{P}}$ | |
| \posAMin | $\mathrm{Min}_{\preceq_{\mathcal{P}}}$ | Minimal elements |
| \posAmin | $\min_{\preceq_{\mathcal{P}}}$ | The least element |
| \posAmax | $\max_{\preceq_{\mathcal{P}}}$ | The least element |
| \posB | $\mathcal{Q}$ | |
| \posBleq | $\preceq_{\mathcal{Q}}$ | |
| \posC | $\mathcal{R}$ | |
| \lfp | lfp | Least fixed point |
| \prefixed | prefixed | prefixed points |
| \CPOs | CPO$s$ | |
| \CPO | CPO | |
| \DCPOs | DCPO$s$ | |
| \DCPO | DCPO | |
| \antichains | A | |

The antichains sets of P are $\mathsf{A}(P)$

```
The antichains sets of P are $\antichains(P)$
```

| | | |
|---|---|---|
| \upsets | U | |

The upper sets of $\mathcal{P}$ are $\mathsf{U}\mathcal{P}$

```
The upper sets of $\posA$ are $\upsets\posA$
```

| | | |
|---|---|---|
| \downsets | D | |

The down sets of $\mathcal{P}$ are $\mathsf{D}\mathcal{P}$

```
The down sets of $\posA$ are $\downsets\posA$
```

| | | |
|---|---|---|
| \upresleq | $\preceq_{\mathsf{U}\mathcal{R}}$ | |
| \upressp | $\mathsf{U}\mathcal{R}$ | |
| \allupsets | Up | |
| \upit | $\uparrow$ | Converts to smallest upset containing the ste |
| \stupit | $\dot{\uparrow}$ | Strict upper closure |

| 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<br>$\conditional(\setB;\setA)$ 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.<br>$\measureSp(\aset{X},\Sigma,\mu)$ is a measure space. |
| \probSp | prob | Probability space. |
| | | prob$(\mathcal{X},\Sigma,\mu)$ is a probability space.<br>$\probSp(\aset{X},\Sigma,\mu)$ is a probability space. |
| \measures | Measures | Set of probability measures on a set. |
| | | Try $\mu^{\mathcal{X}} \in$ Measures$(\mathcal{X})$<br>Try $\mu^{\aset{X}} \in \measures(\aset{X})$ |
| \dirac | $\delta$ | |

| common/robotics | *Robotics* | |
|---|---|---|
| \obsip | $m$ | Inner product bilinear form. |
| \obsosp | $\mathcal{O}$ | Observation output space. |
| \dummySensel | $s$ | |
| \pose | $\boldsymbol{q}$ | Robot pose $\boldsymbol{q} = (\boldsymbol{t}, \mathbf{R}) \in \mathcal{Q} \subset$ SE(3). |
| \posesp | $\mathcal{Q}$ | Pose space, subgroup of SE(3). |
| \posespAlg | q | Pose space algebra. |
| \confspace | $\mathcal{Q}$ | Robot configuration space |
| \pos | $\boldsymbol{t}$ | Position in the world frame. |
| \posEl | $t$ | Position in the world frame (element) |
| \rotm | $\mathbf{R}$ | Rotation matrix representing orientation in the world fra |
| \rotme | $R$ | Element of rotation matrix |
| \lvel | $\boldsymbol{v}$ | Linear velocity |
| \lvele | $v$ | Linear velocity (element) |
| \avel | $\boldsymbol{\omega}$ | Angular velocity (as vector) |
| \avele | $\omega$ | Angular velocity (element) |
| \avels | $\omega$ | 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. |
| \fieldpose | $z$ | Generic position in the world. |
| \worldSp | Maps | |

| 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 Maps = Shapes $\times$ 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 systems. |
| \DCTI | CDTI | Deterministic continuous-time time-invariant systems. |
| \DFSTI | DFSTI | Discrete-time finite-state-space time-invariant systems. |
| \CFSTI | CFSTI | Continuous-time finite-state-space time-invariant system |
| \DFSTIGO | DFSTIGO | Discrete-time finite-state-space time-invariant systems wi |
| \CLTI | CLTI | Continuous-time linear time-invariant systems |
| \CLTIG | CLTIG | Continuous-time linear time-invariant systems with Gaus |
| \DLTI | DLTI | Discrete-time linear time-invariant systems |
| \DSMPLTI | DSMPLTI | Discrete-time stable minimum-phase linear time-invarian |
| \DLTIG | DLTIG | Discrete-time linear time-invariant systems with Gaussia |
| \laptrans | $\mathcal{L}$ | Laplace transform |
| \impulseresp | ImpulseResp | Impulse response of a system |
| \transferfunc | TF | Transfer function |
| | | |
| 0typography | *Basic typography* | |
| \myacronym{...} | | All acronyms; good for text as well as math mode. Use l |
| | | |
| 0typography/tensors | *Tensors and tensor elements* | |
| \T{...} | | Tensor |

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

`0typography/matrices` *Matrices and matrix elements*

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

`0typography/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 $\agroup{X}$,
$\agroup{G}$, \dots
```

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

`0typography/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.
`\codefunc{...}` Code functions

The function `select`
```
The function \codefunc{select}
```

`\swpackage{...}` Name of software packages

The package Procgraph, ZMQ, Unix .
```
The package \swpackage{Procgraph},
\swpackage{ZMQ}, \swpackage{Unix} .
```