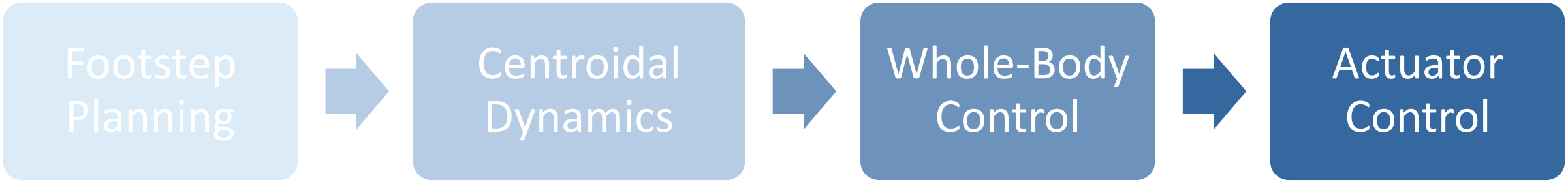
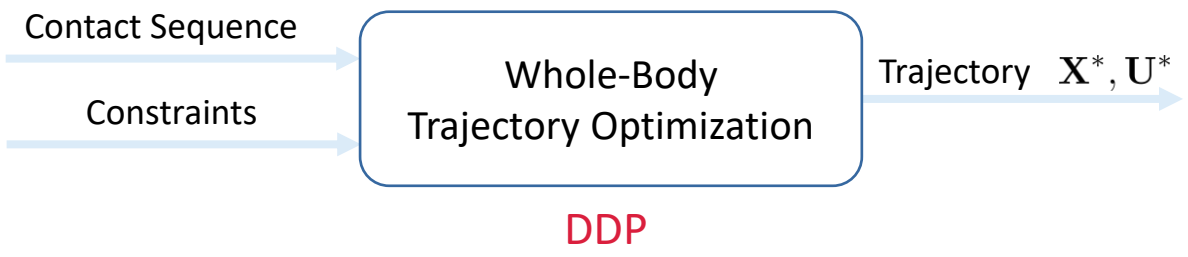
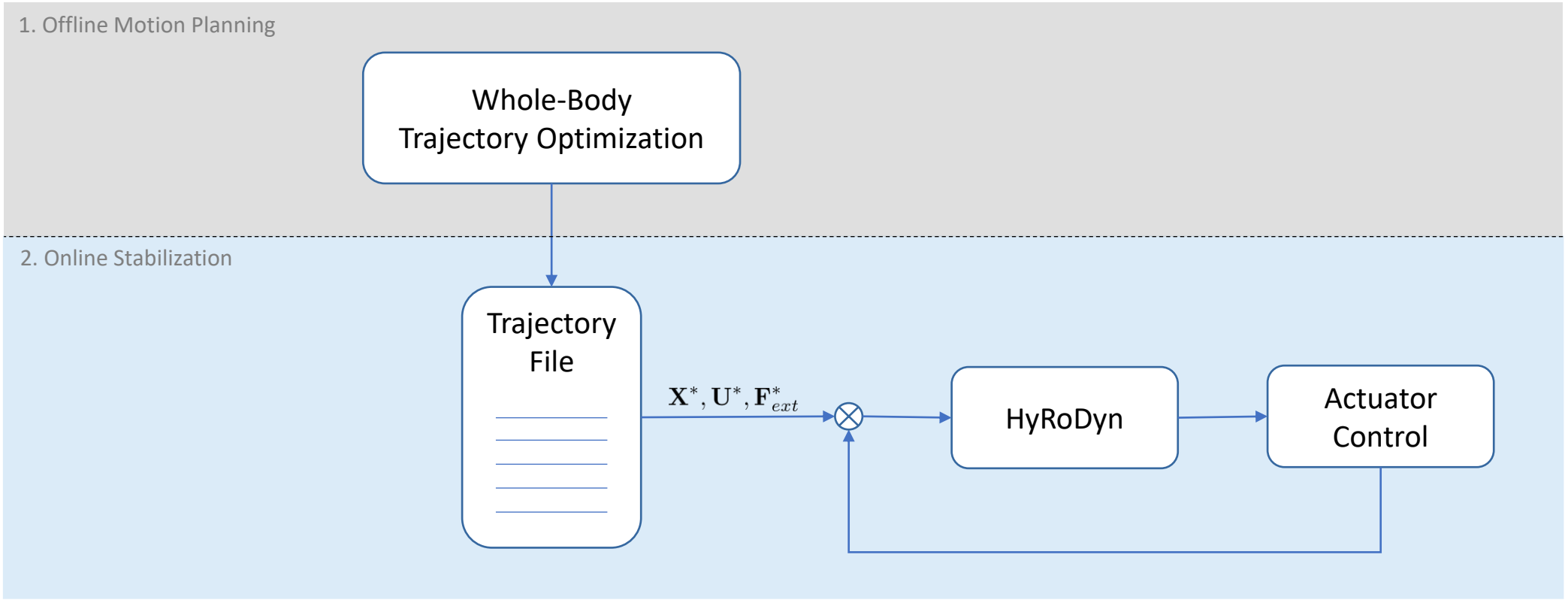
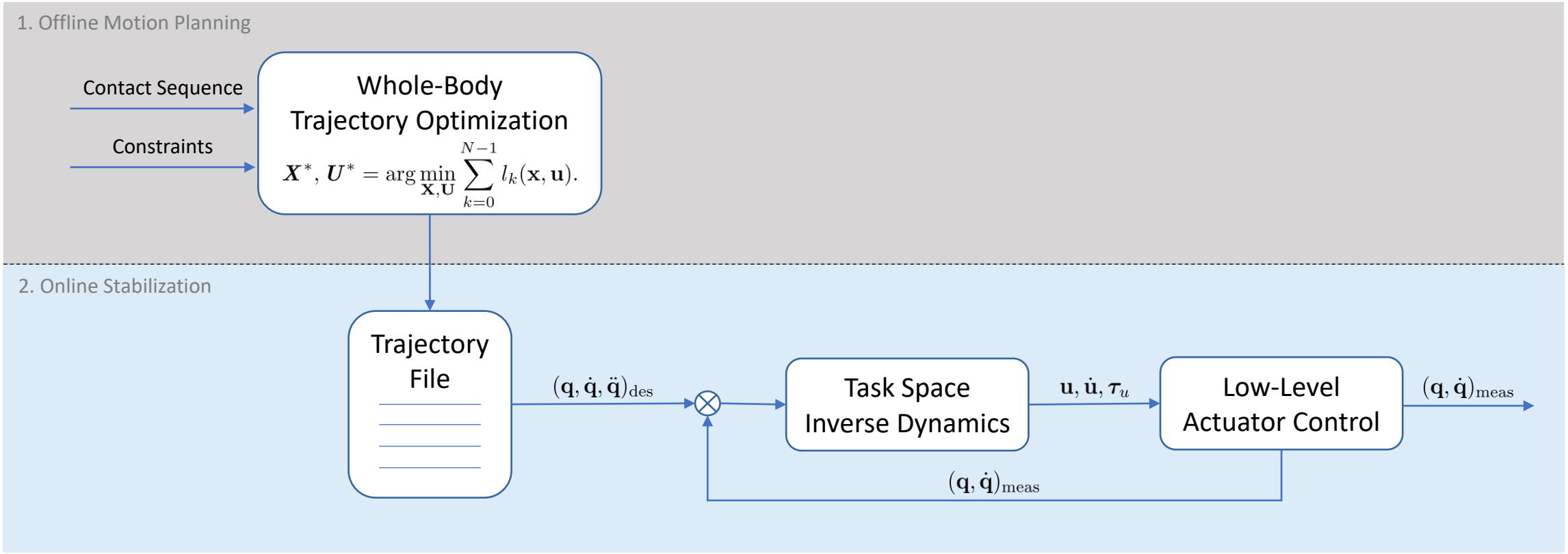

Footstep Planning
Centroidal Dynamics
Whole-Body Control
Actuator Control

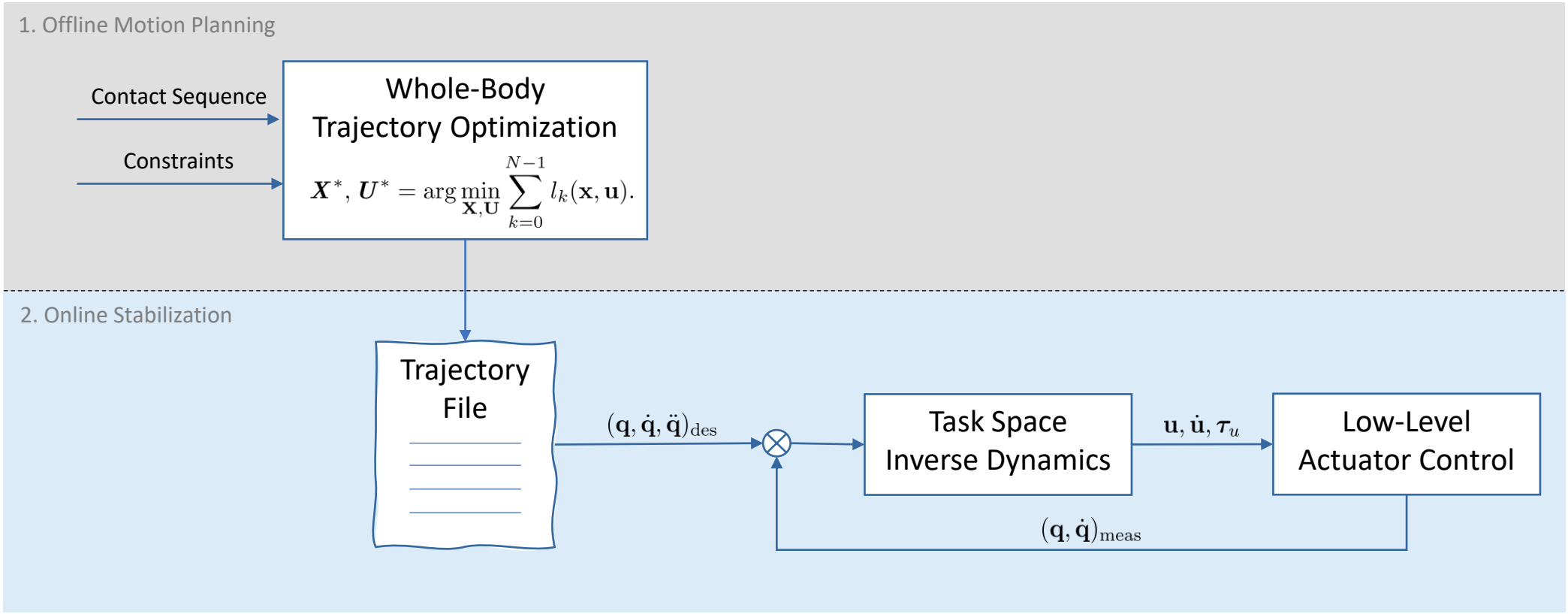

Contact Sequence
Constraints
Whole-Body
Trajectory Optimization
Trajectory $\mathbf{X}^*, \mathbf{U}^*$
DDP


1. Offline Motion Planning
Whole-Body
Trajectory Optimization
2. Online Stabilization
Trajectory
File
$\mathbf{X}^*, \mathbf{U}^*, \mathbf{F}^*_{ext}$
HyRoDyn
Actuator
Control

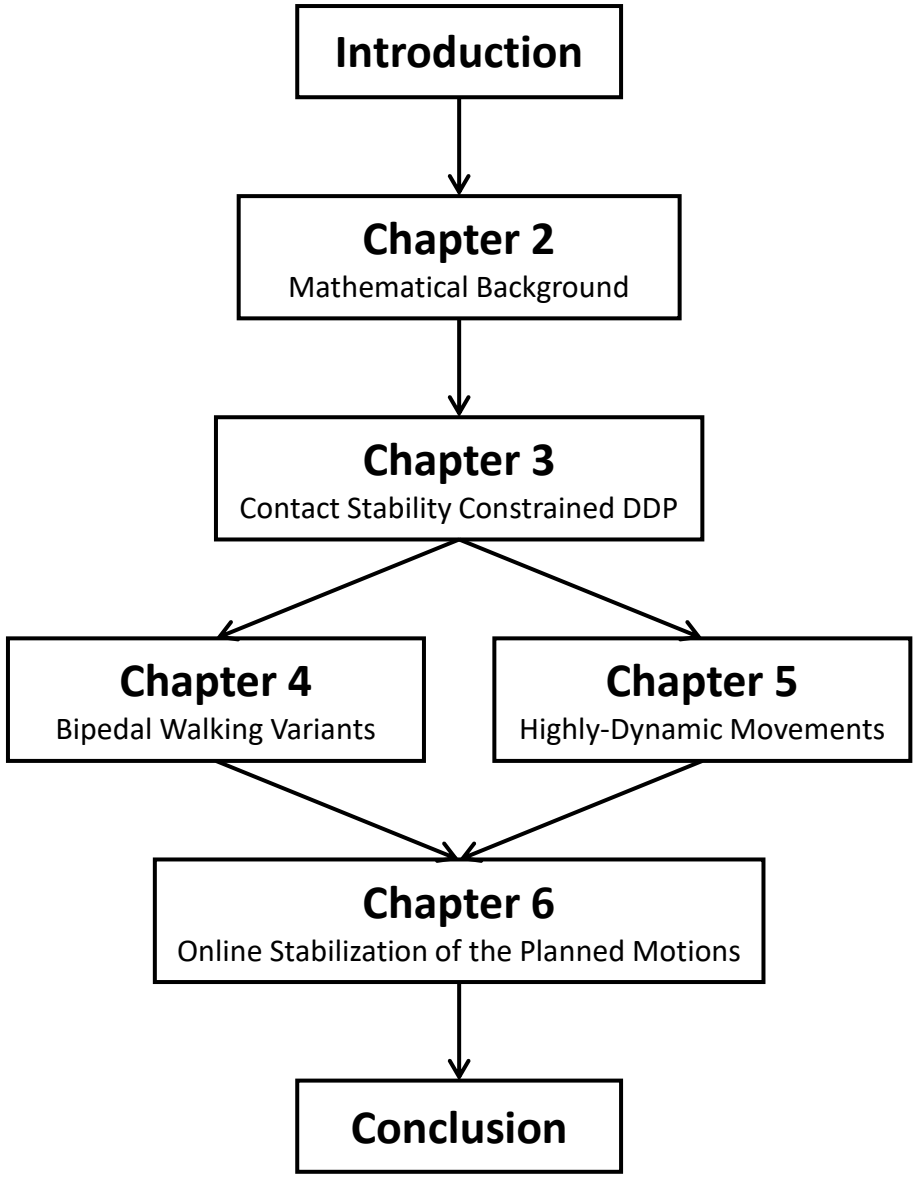


$\mathbf{X}^*, \mathbf{U}^*, \mathbf{F}^*_{\text{ext}}$

$\mathbf{q}_{\text{des}}, \dot{\mathbf{q}}_{\text{des}}, \ddot{\mathbf{q}}_{\text{des}}$



Actuator Control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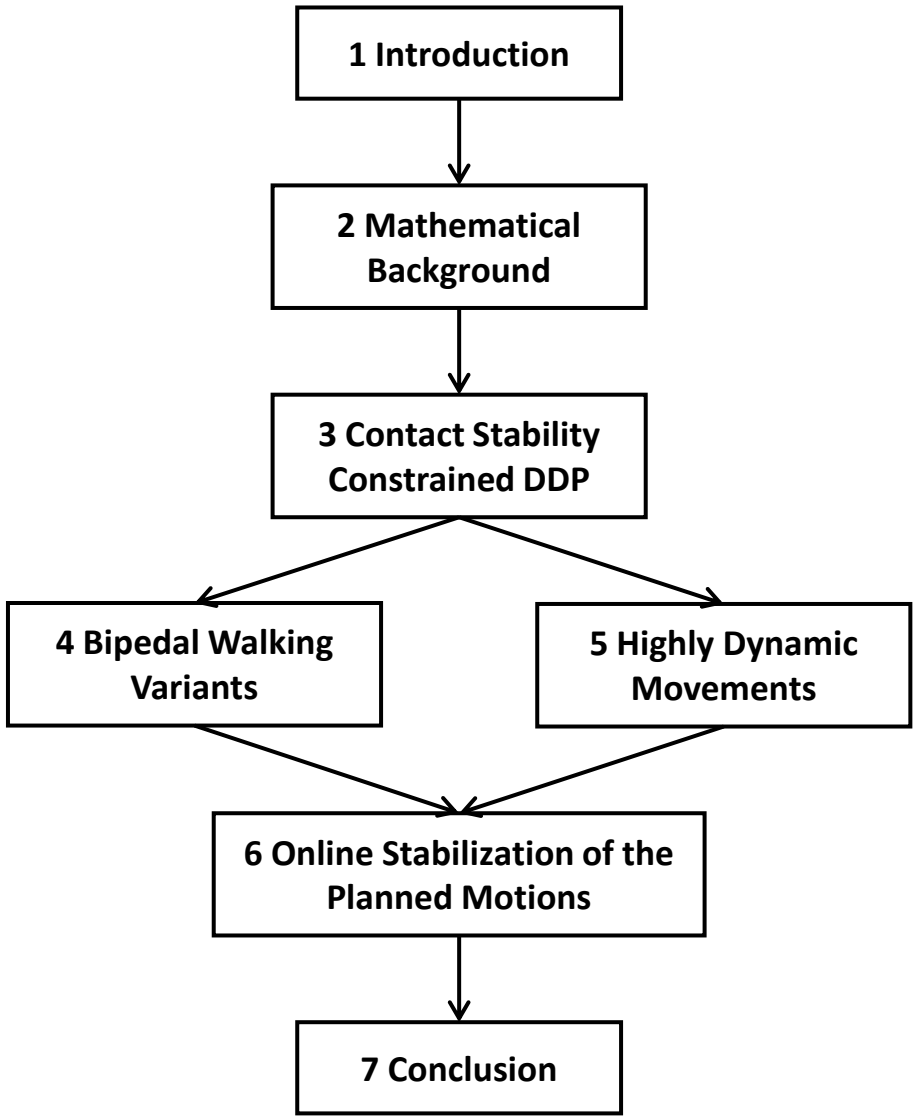
Chapter 3
Contact Stability Constrained DDP
Chapter 4
Bipedal Walking Variants
Chapter 5
Highly-Dynamic Movements
Chapter 6
Online Stabilization of the Planned Motions
Conclusion


1 Introduction
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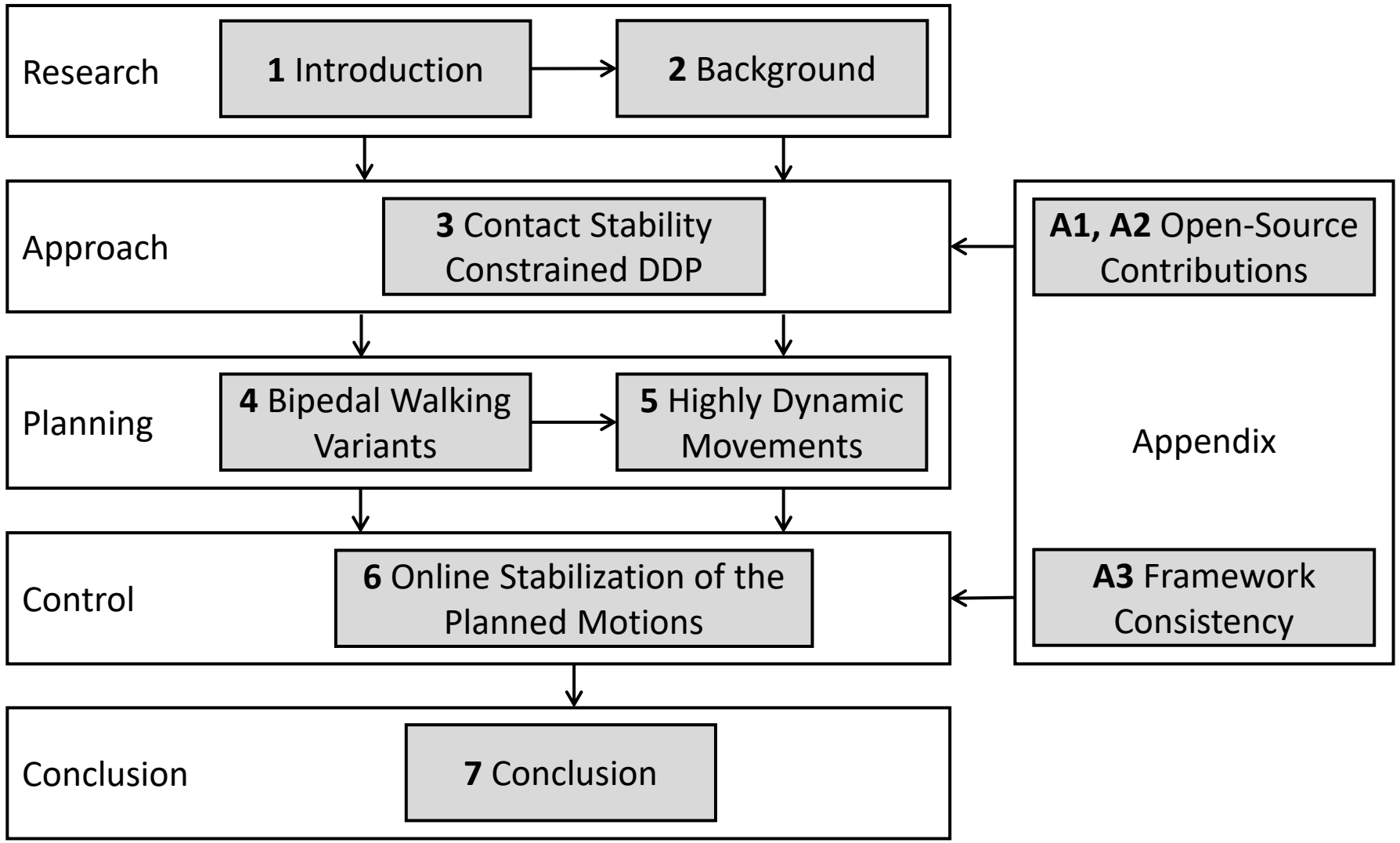
7 Conclusion


Research
1 Introduction
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Approach
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Planning
4 Bipedal Walking Variants
5 Highly Dynamic Movements
Control
6 Online Stabilization of the Planned Motions
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7 Conclusion
A1, A2 Open-Source Contributions
Appendix
A3 Framework Consistency