



Riset dan Implementasi Teknologi Optimasi menuju Indonesia Lebih Baik

Prof. Dr. Ir. Andi Adriansyah, M.Eng

Keynote Speaker pada Webinar Nasional Cendikiawan Ke-6

Jakarta, 5 September 2020



Prof. Dr. Ir. Andi Adriansyah, M.Eng., SMIEEE
andi@mercubuana.ac.id, 0811188422
Jakarta, 27 Feb 1970

1988-1994
1996-1998
2003-2007

S1, Teknik Elektro, UI
S2, Control Engineering, UTM, Malaysia
S3, Mechatronics & Robotics, UTM, Malaysia

1994-sekarang
2019-sekarang
2015-sekarang
2015-sekarang
Sekarang

Dosen Tetap Universitas Mercu Buana
Ketua Program Studi Magister Teknik Elektro
Editor In Chief Jurnal SINERGI, *International Journal* / SINTA2
Editor dan Reviewer di beberapa jurnal (dalam/luar negeri)
Anggota IEEE, Senior Member IEEE, Robotics and Automation Society (RAS), Control System Society (CSS), PII, PDRI, ADI, HEBII, FORTEI, Soft Computing Indonesia, Verifikator SINTA, Penulis Jurnal, Peneliti, Reviewer Dikti Bersertifikat, Asesor Sertifikasi Dosen, dll.





SUP YANG NIKMAAAAT???



+



+



Perlu KOMPOSISI yang OPTIMAL

OPTIMIZATION

The task of optimization is that of determining the values of a set of *parameters* so that some measure of optimality is **satisfied**, subject to certain **constraints**.



OPTIMIZATION

BASIC ELEMENTS

1. An **objective** function,
2. A set of **variable**
3. A set of **constraints**



OPTIMIZATION

The solutions:

- Arrangements,
- Sequences,
- Combinations,
- Choices of Objects,
- Routes in A Network,
- Schedules of Jobs,
- Etc.

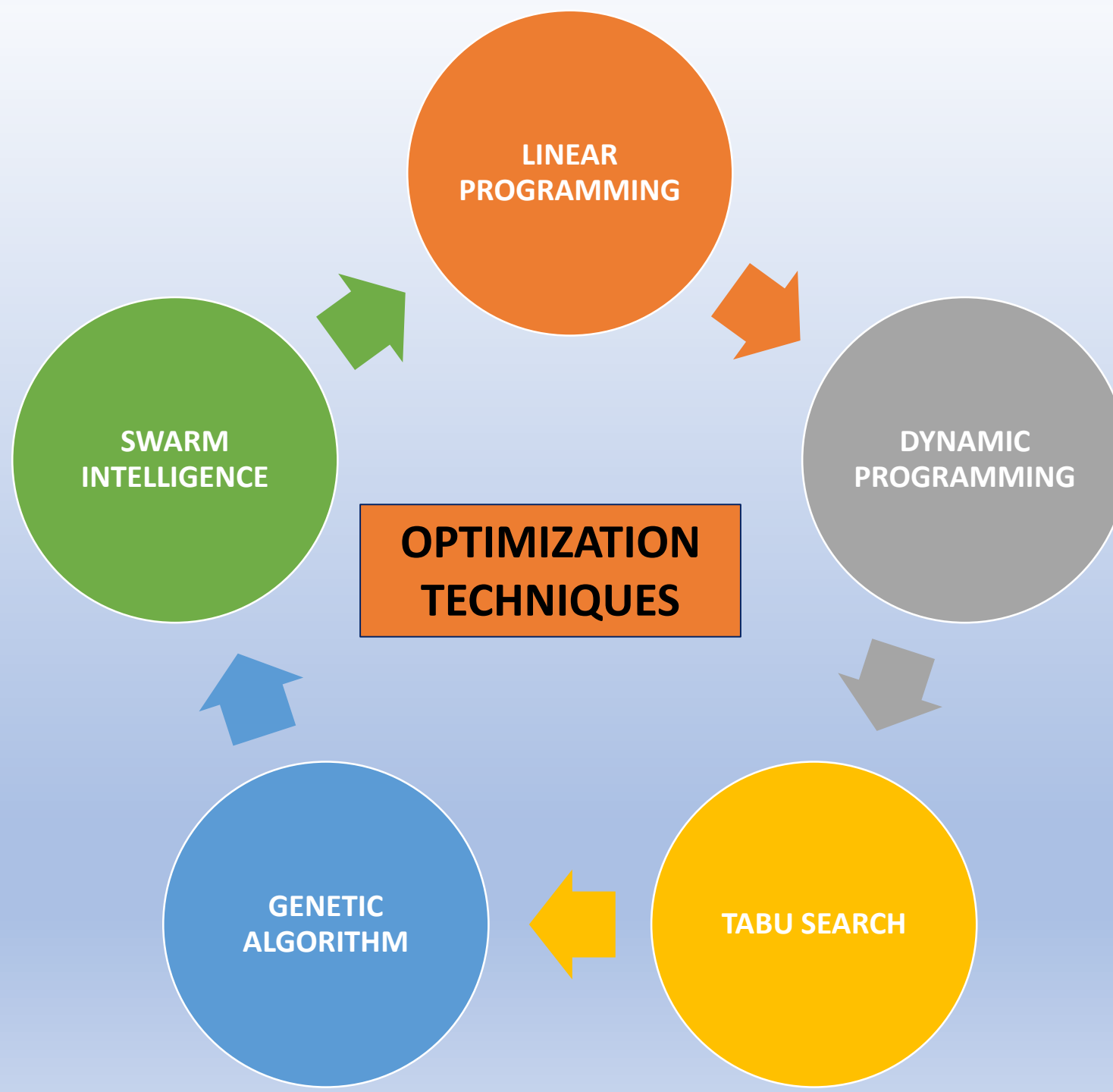


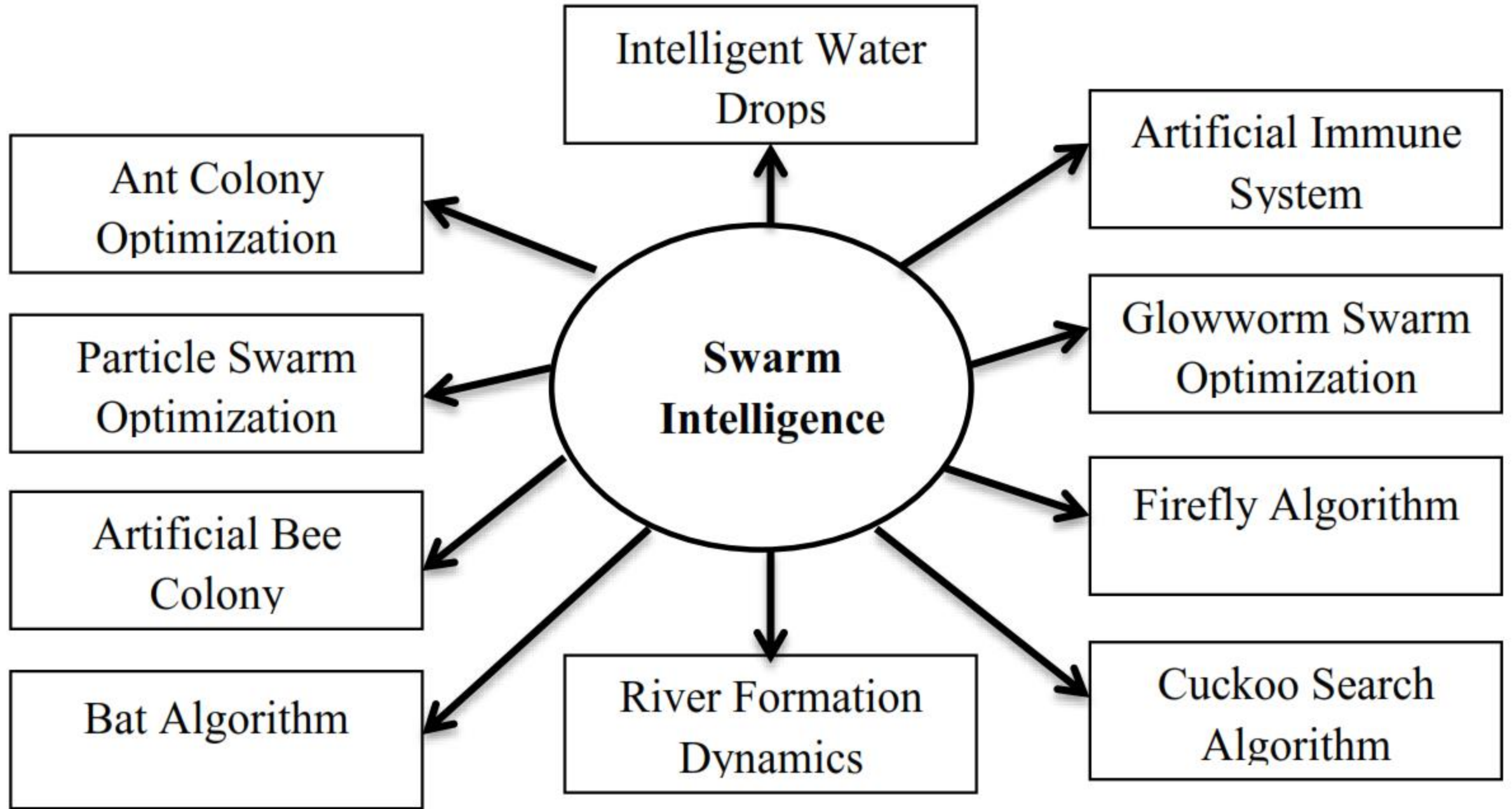
OPTIMIZATION



This task is of great importance to many professions,

- Scientists,
- Economists,
- Social and Environment,
- Engineers.





Particle Swarm Optimization (PSO)

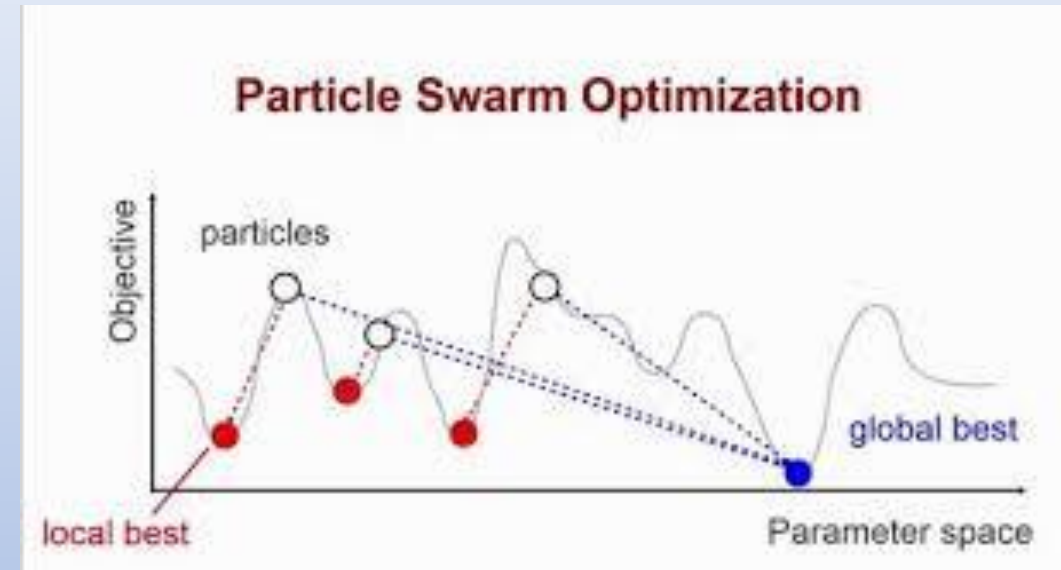
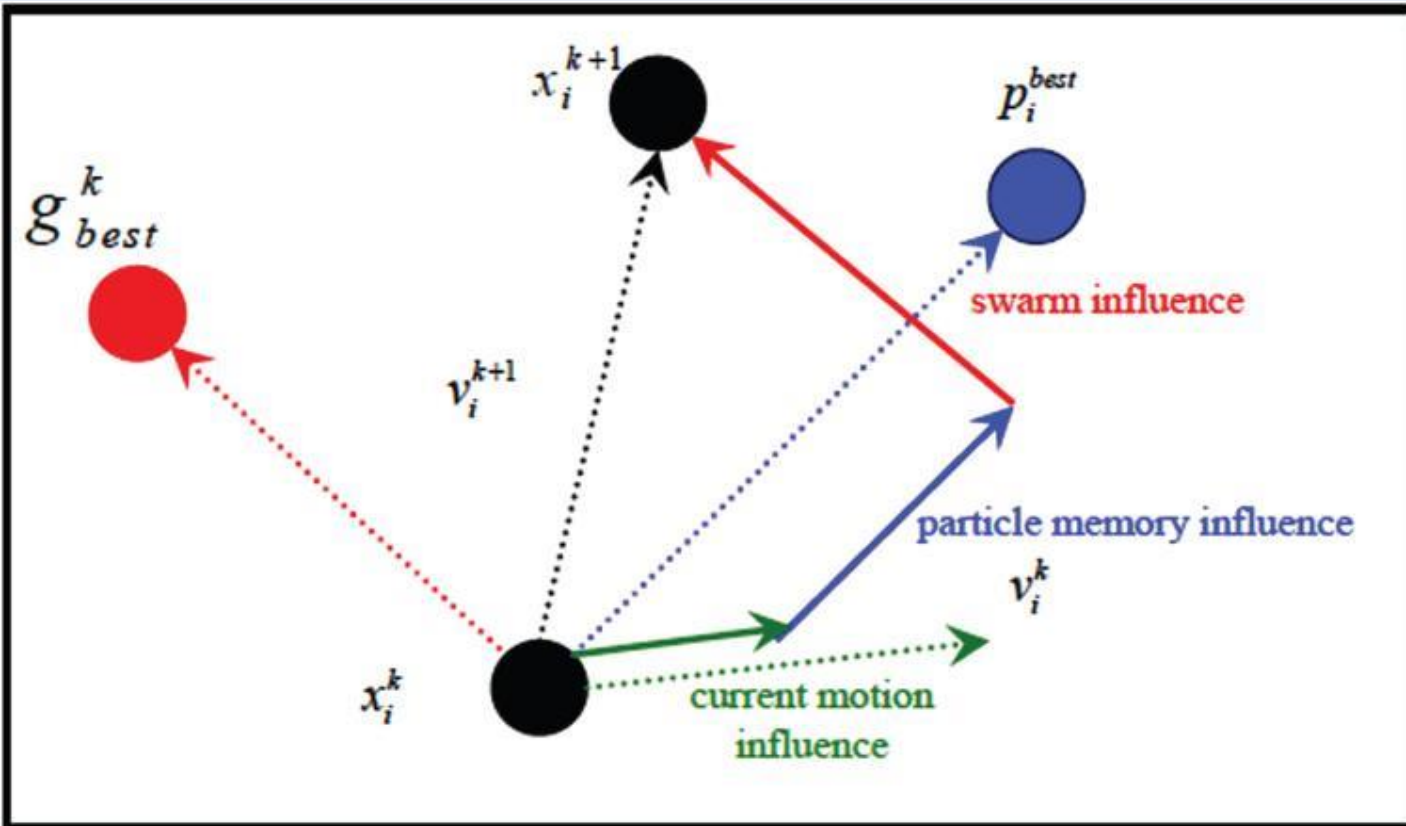


Bird Flocking

Fish Schooling



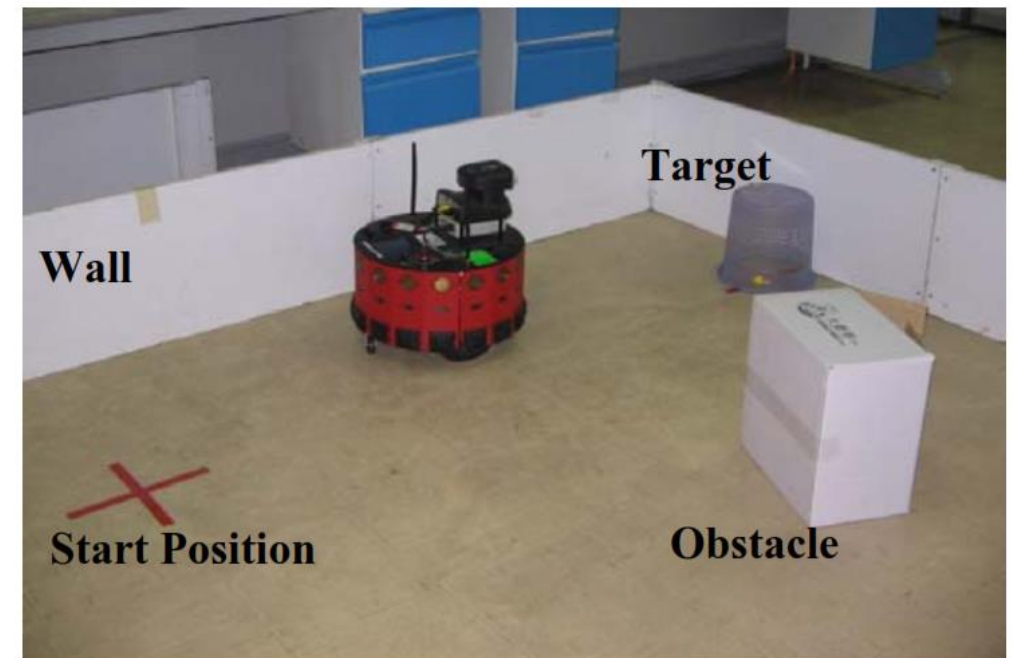
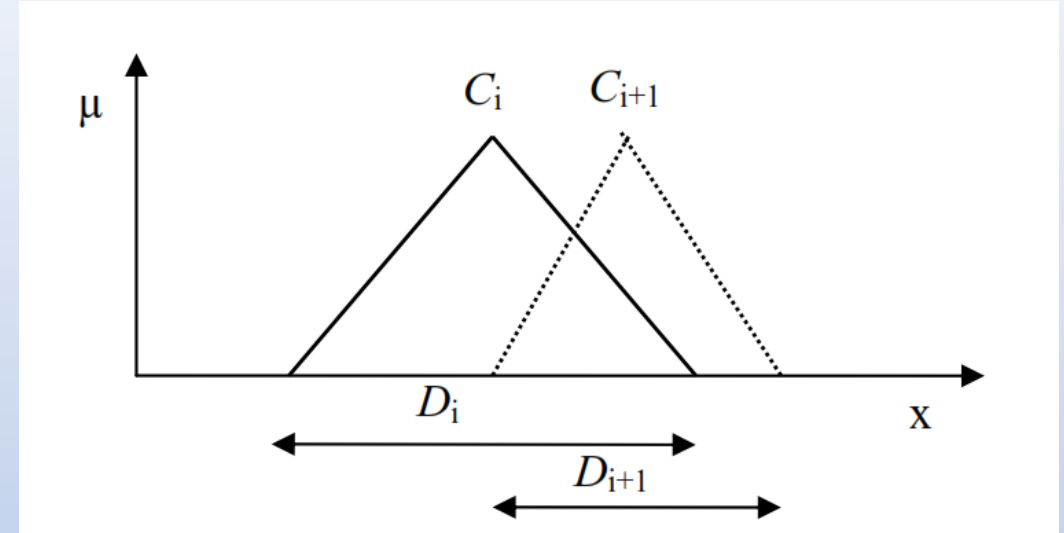
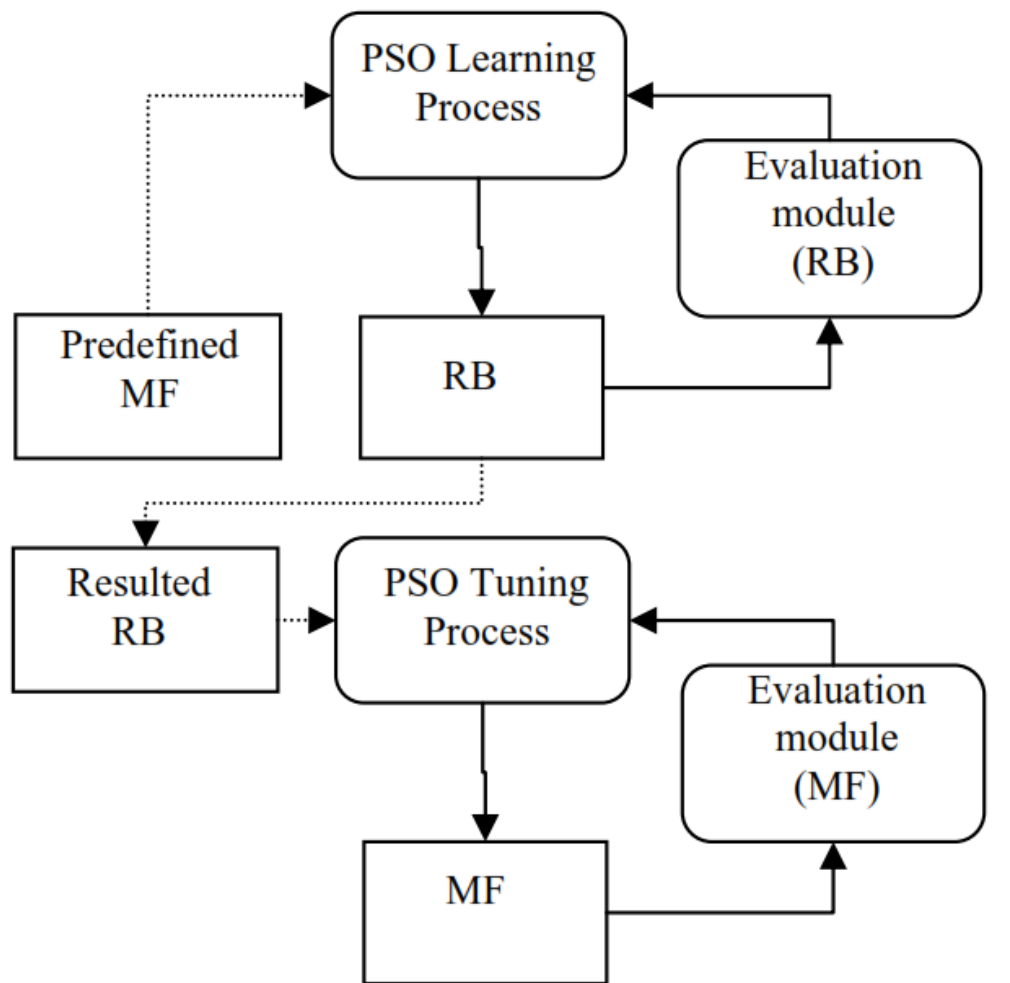
Particle Swarm Optimization (PSO)



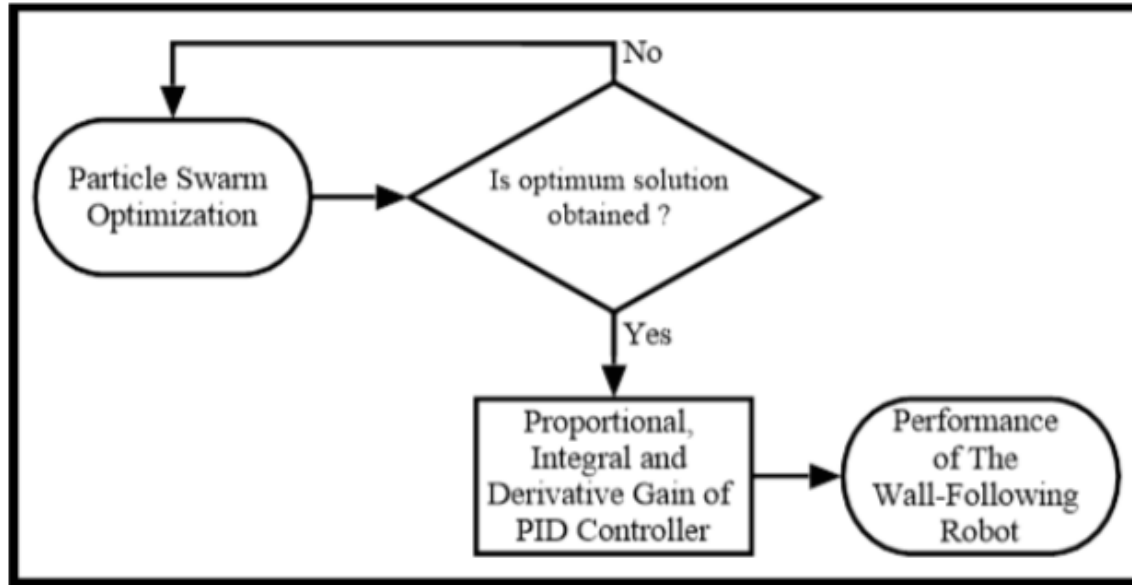
$$v_i^{k+1} = v_i^k + c_1 * rand(.) * (pbest - s_i^k) + c_2 * rand(.) * (gbest - s_i^k)$$

$$s_i^{k+1} = s_i^k + v_i^{k+1}$$

PARTICLE SWARM - FUZZY CONTROLLER FOR BEHAVIOR-BASED MOBILE ROBOT



IMPROVING WALL-FOLLOWING ROBOT PERFORMANCE USING PID-PSO CONTROLLER



Characteristic	Dynamic Error	Improvement (%)	Final Position (s)
Normal Movement	0.83625	0	9.1986
PID Only	0.78666	4.959	9.2987
PID-GA	0.78543	5.082	9.2867
PID-PSO	0.74619	9.006	9.2528





Terima
Kasih