Washington, D.C. 20549				
SCHEDULE 13G (Rule 13d-102)				
INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT TO RULES 13d-1 (b) (c), AND (d) AND AMENDMENTS THERETO FILED PURSUANT TO RULE 13d-2 (b)				
Mercury Computer Systems, Inc.				
(Name of Issuer)				
Common Stock, \$0.01 par value				
(Title of Class of Securities)				
589378108				
(CUSIP Number)				
November 6, 2006				
(Date of Event which Requires Filing of this Statement)				
Check the appropriate box to designate the rule pursuant to which this Schedule is filed: X Rule 13d-1(b)				
_ Rule 13d-1(c) _ Rule 13d-1(d)				
*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.				
The information required on the remainder of this cover page shall not be deemed				

SECURITIES AND EXCHANGE COMMISSION

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

CUSIP	No. 5893	78108	13G		Page 2 of 8 Pages
1.			ING PERSONS IDENTIFICATION NOS. OF ABOVE		
	Renaissa	nce Teo	chnologies Corp.	13-3127734	
2.	CHECK API (a) _ (b) _		ATE BOX IF A MEMBER OF A GROUF		,
3.	SEC USE				
4. CITIZENSHIP OR PLACE OF ORGANIZATION					
	Delaware				
		5.	SOLE VOTING POWER		
			1,200,300		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING		6.	SHARED VOTING POWER		
			-		
		7.	SOLE DISPOSITIVE POWER		
PEF	RSON ITH		1,200,300		
		8.	SHARED DISPOSITIVE POWER		
			0		

9.	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON	
	1,200,300	
10.	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS)	_
11.	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)	
	5.42%	
12.	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)	
	IA	

Page 2 of 8 Pages

CUSIP	No. 5893	78108	1	13G	Page 3 of 8 Pages	
1.	NAMES OR REPORTING PERSONS S.S. OR I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS					
	James H. Simons					
2.	(a) _ (b) _					
3. SEC USE ONLY						
4.			R PLACE OF ORGANIZAT	TION		
	United S	tates				
		5.	SOLE VOTING POWER			
			1,200,300			
	MBER OF HARES EFICIALLY NED BY EACH PORTING ERSON	6.	SHARED VOTING POWE			
BENE			0			
E		7.	SOLE DISPOSITIVE F	POWER		
PE			1,200,300			
WITH		8.	SHARED DISPOSITIVE	E POWER		
			0			
9.	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON					
	1,200,30	0				
10.	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS)					
11.	11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)					
	5.42%					
12.	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)					
	IN					

Page 3 of 8 Pages

Item 1.

(a) Name of Issuer.

Mercury Computer Systems, Inc.

(b) Address of Issuer's Principal Executive Offices.

199 Riverneck Road Chelmsford, MA 01824

Item 2.

(a) Name of Person Filing.

This Schedule 13G is being filed by Renaissance Technologies Corp. ("RTC") and James H. Simons ("Simons").

(b) Address of Principal Business Office or, if none, Residence.

The principal business address of the reporting persons is:

800 Third Avenue New York, New York 10022

(c) Citizenship.

 $\ensuremath{\mathsf{Dr}}$. Simons is a United States citizen and RTC is a Delaware corporation

(d) Title of Class of Securities.

Common Stock, \$0.01 par value

(e) CUSIP Number.

589378108

Page 4 of 8 Pages

Item 3. If this statement is filed pursuant to Rule 13d-1(b) or 13d-2(b) or (c), check whether the person filing is a:

- (a) $|_|$ Broker or dealer registered under Section 15 of the Act.
- (b) $|_{-}|$ Bank as defined in Section 3(a)(6) of the Act.
- (c) $|_{-}|$ Insurance Company as defined in Section 3(a)(19) of the Act.
- (d) |_| Investment Company registered under Section 8 of the Investment Company Act.
- (e) |X| Investment Adviser in accordance with Sec. 240.13d-1(b)(1)(ii)(E).
- (f) |_| Employee Benefit Plan or Endowment Fund in accordance with Sec. 240.13d1(b)(1)(ii)(F).
- (g) |_| Parent holding company, in accordance with Sec. 240.13d-1(b)(ii)(G).
- (h) |_| A savings association as defined in Section 3(b) of the Federal Deposit Insurance Act.
- (i) |_| A church plan that is excluded from the definition of an investment company under Section 3(c)(14) of the Investment Company Act of 1940.
- (j) $|_{-}|$ Group, in accordance with Sec. 240.13d-1(b)(1)(ii)(J).

If this statement is filed pursuant to Sec. 240.13d-1(c), check this box $|_{-}|$.

Item 4. Ownership

(a) Amount Beneficially Owned.

- Simons: 1,200,300 shares, comprising the shares beneficially owned by RTC, because of Dr. Simons' position as control person of RTC.
- (b) Percent of Class. RTC: 5.42% Simons: 5.42%
- (c) Number of shares as to which each such person has

(i)	sole power to vote or to direct the vote:	RTC: Simons:	1,200,300 1,200,300
(ii)	shared power to vote or to direct the vote:		0
(iii)	sole power to dispose or to direct the disposition of:	RTC: Simons:	1,200,300 1,200,300
(iv)	shared power to dispose or to direct the disposition of:		0

Page 5 of 8 Pages

Item 5. Ownership of Five Percent or Less of a Class.

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following $|_|$

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

Certain funds and accounts managed by RTC have the right to receive dividends and proceeds from the sale of the securities which are the subject of this report. RIEF Trading LLC holds of record more than 5% of such securities.

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company or Control Person.

Not applicable.

Item 8. Identification and Classification of Members of the Group.

Not applicable.

Item 9. Notice of Dissolution of Group.

Not applicable.

Page 6 of 8 Pages

Item 10. Certification.

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, ${\tt I}$ certify that the information set forth in this statement is true, complete and correct.

Date: February 12, 2007

/s/ James H. Simons James H. Simons

Renaissance Technologies Corp.

By: /s/ Mark Silber Mark Silber Vice President

Attention: Intentional misstatements or omissions of fact constitute Federal criminal violations (see 18 U.S.C. 1001).

Page 7 of 8 Pages

EXHIBIT 99.1

AGREEMENT REGARDING JOINT FILING UNDER UNDER RULE 13D-1(K) OF THE EXCHANGE ACT

In accordance with Rule 13d-1(k) under the Securities Exchange Act of 1934, as amended, each of the undersigned agrees to the filing on behalf of each of a Statement on Schedule 13G, and all amendments thereto, with respect to the shares of Common Stock of Mercury Computer Systems, Inc.

Date: February 12, 2007

/s/ James H. Simons James H. Simons

Renaissance Technologies Corp.

By: /s/ Mark Silber Mark Silber Vice President

Page 8 of 8 Pages